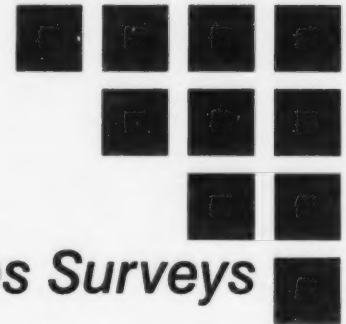

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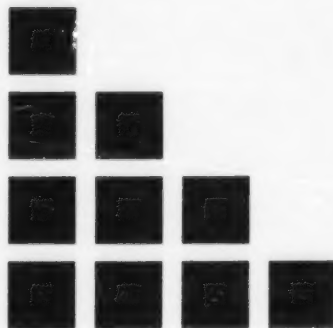
The National Graduates Surveys

Which Fields of Study Lead to Satisfying Jobs Evidence on the Level and Growth of Job Satisfaction

R-00-1-7E

by
Marc Frenette
April 1999

Research Paper



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This report is part of a set of research studies on the National Graduates Surveys. /
Le présent rapport fait partie d'un ensemble d'études sur les Enquêtes nationales auprès de diplômés.

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Abstract

We investigate the effects of various fields of study on job satisfaction using three cohorts of the National Graduates Survey (NGS). Contrary to similar studies, we look at changes in job satisfaction over time associated with the choice of field. More specifically, we model the probability of reporting a downward (or upward) shift in the level of job satisfaction (both non-monetary and monetary) between interviews. From this work, we create *risk indices* in order to identify fields that are more or less likely to lead its graduates into careers with declining (or rising) levels of non-monetary and monetary job satisfaction.

We find that our results differ considerably across the two types of risk indices. Standard research would attempt to evaluate the fields of study by earnings measures, and would therefore fail to reveal any interest differences between the earnings and the non-monetary components of graduates' jobs.

A finding of considerable importance in our work relates to the fact that Health graduates have been more prone to enter careers that entail declining levels of non-monetary job satisfaction since the late 1980s. This is interesting in light of the fact that these graduates have been *less* prone to enter careers that entail declining levels of *monetary* job satisfaction since the late 1980s. We also find that females entering scientific fields may benefit from choosing Engineering & Computer Sciences rather than the more traditional Agricultural & Biological Sciences. This result holds for both our non-monetary and monetary risk indices.

Résumé

Nous étudions l'incidence de divers domaines d'études sur la satisfaction professionnelle en utilisant trois cohortes de l'Enquête nationale auprès des diplômés (END). Contrairement à des études de même nature, nous étudions l'évolution de la satisfaction professionnelle au fil des ans en fonction du domaine d'études choisi. Plus précisément, nous modélisons la probabilité de déclarer une baisse (ou un accroissement) du niveau de satisfaction professionnelle (tant pécuniaire que non pécuniaire) entre les entrevues. À partir de ce travail, nous élaborons des *indices de risque* afin de déterminer les domaines qui sont plus ou moins susceptibles d'orienter les diplômés qui en sont issus vers des carrières où les niveaux de satisfaction professionnelle (pécuniaire et non pécuniaire) baissent (ou augmentent).

Nous constatons que nos résultats sont considérablement différents entre les deux genres d'indices de risque. La recherche normale tenterait d'évaluer les domaines d'études en fonction de mesures de la rémunération, et omettrait donc de révéler tout écart intéressant entre les composantes salariale et non pécuniaire des emplois des diplômés.

Nous avons fait une constatation importante dans nos travaux, soit le fait que les diplômés du secteur de la santé aient été davantage portés à embrasser des carrières où les niveaux de satisfaction professionnelle non pécuniaire baissent depuis la fin des années quatre-vingt. Ce résultat est intéressant, compte tenu du fait que ces diplômés ont été *moins* portés à embrasser des carrières où les niveaux de satisfaction professionnelle *pécuniaire* baissent depuis la fin des années quatre-vingt. Nous constatons également que les femmes qui intègrent les filières scientifiques peuvent être avantagées en choisissant le génie et les sciences informatiques plutôt que les domaines plus traditionnels des sciences agricole et biologique. Nous obtenons les mêmes résultats pour nos indices de risque non pécuniaire et pécuniaire.

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1. Introduction

Many studies attempting to evaluate university fields of study have focused on their earnings effects. While we don't wish to diminish the importance of this measure as a gauge for success in the working world, we feel it is time to investigate complementary ways of ranking the choices that students make when selecting an academic discipline. In particular, a detailed analysis of job satisfaction of graduates from various fields may yield some useful insights into the career prospects of current and future students. A clear understanding of which fields of study lead to satisfying jobs may enter into the policymakers' decision-making process when they redirect scholarships and other incentives across the fields of study.

Section 2 provides a review of the literature. No study similar to ours was found, but we outline other studies on job or life satisfaction (which weren't done by field of study), as well as the more standard "earnings effects" studies by discipline. In Section 3, we describe the data set and the working samples that are used in our study, as well as show trends in job satisfaction over the timeline of the data. An important objective of this section will be to demonstrate how cross-sectional methods can be misleading when they are applied to subjective variables such as job satisfaction. The main results of our study are discussed in Section 4. Finally, Section 5 puts the results of our study into perspective.

2. Literature Review

2.1 Satisfaction Literature

Providing a detailed review of the massive sociological and psychological literature on job satisfaction is beyond the scope of this section. We limit ourselves to three articles that reflect some of the problems that researchers can encounter when dealing with subjective variables such as job satisfaction. The first study was undertaken by Mullis (1992), and attempts to model psychological well being as a function of alternative measures of economic well being. The author notes that much of the existing research stipulates that psychological well being is mainly determined by a measure of current income, which fails to take into account all of the economic resources of individuals. The dependent variable in Mullis' model is the summation of the numerical answers to six questions regarding happiness in one's life (i.e. standard of living, housing, health, area of residence, leisure time, and life in general). Respondents were given a choice of answers ranging from 1 to 4 (where a higher number represents more happiness) for each of the six questions. Mullis regressed the sum of these six numerical answers on various measures of economic well-being (earnings, income, net worth, etc...) in separate ordinary least squares models (to avoid multicollinearity between these variables), each containing a set of demographic controls.

There are two points of interest in Mullis' methodology. First, there seems to be an emphasis placed on the *magnitude* of the happiness of the respondents. The phenomenon that Mullis examined was categorical in nature and treating it in a continuous manner could mislead readers into attaching a particular meaning to the estimated coefficients. More specifically, Mullis' regressions incorporate the assumption that a category of satisfaction given a value of "2" represents twice as much satisfaction as a category given a value of "1." More appropriate procedures would require the researcher to model the *probability* of reporting a certain category. Also, Mullis focused on the importance of a robust measure of economic resources (such as family wealth or lifetime income). However, it is quite possible that the medium by which these broad economic resources affect reported outcomes might be the investment in human capital. Perhaps Mullis should have attempted to focus directly on educational attainment.

A paper by Blanchflower and Oswald (1997) improves upon Mullis' methodology by modeling the probability of reporting various levels of life satisfaction using ordered logit regressions of several cross-sections of youths in Europe and the United States. This technique is more appropriate for categorical data, but the lack of specific educational data constitute a fundamental problem with the Blanchflower and Oswald paper. The authors control for educational differences by including a series of dummy variables that indicate the age when the respondent left school, but fail to control for field of study. The reader is left with no indication of which fields of study lead to satisfying careers.

Clark and Oswald (1996) model job satisfaction as a function of income, a "comparison" level of income,¹ and other controls. They confirm their *a priori* expectations by finding a negative relationship between the comparison income and job satisfaction. This finding contradicts standard microeconomic textbooks that postulate that job satisfaction (or utility) is a positive function of the *level* of income or earnings. This issue will be investigated in our work.

As mentioned above, the sociology and psychology literature contains a very large number of articles on job satisfaction. It was impossible to investigate each of these articles, but our limited search of several hundreds of these failed to uncover a study of the relationship between fields of study and job satisfaction; therefore, we will compare our results with the more standard log earnings equations results found in many studies. A more discouraging result of our review concerns the lack of longitudinal models in the literature. Longitudinal models are useful since they follow the same individuals over time. If one were to investigate the *level* of job satisfaction by field of study, the results would fail to take into account the possibility that people who choose different fields of study may have different career expectations. Since career expectations are difficult to measure, the coefficients associated with the field of study variables may be biased.

2.2 Earnings Literature

The literature on earnings contains many studies of the effects of various fields of study on earnings. Throughout this review, we refer mainly to the more abundant American research

¹ The authors defined this concept as the predicted level of income given the individual's set of characteristics that appear in the satisfaction model. The predicted level of income was estimated by OLS regressions.

(referenced below) on the earnings effects of fields of study. We provide summaries of findings for the eleven field of study groups employed in our study.

Education – The American evidence on earnings results provided by Loury and Garman (1995), Grogger and Eide (1994), Daymont and Andrisani (1984), Rumberger and Thomas (1993), and Hecker (1995) indicate that graduates of Education do very poorly relative to other graduates.²

Fine Arts & Humanities – Within the American evidence we have found, only Loury and Garman (1995), Daymont and Andrisani (1984), and Hecker (1995) provide a sufficiently high level of disaggregation to evaluate such fields. They find that these graduates rank very low in monetary returns relative to other fields of study.

Commerce – The American evidence indicates higher than average monetary returns for Commerce graduates. It is worth mentioning that Hecker (1995) separated Accounting from other Commerce fields, and found average returns for other Commerce fields, but very high returns for Accounting.

Economics – Of all the American studies cited above, only Hecker separates Economics from the other Social Sciences. He finds above average returns for the former, and below average returns for the latter. The remaining American evidence finds below average returns for the broad category of Social Sciences.

Other Social Sciences – The American evidence indicates that the situation for these individuals is not very encouraging.

Agricultural & Biological Sciences – Of the American evidence, only Hecker (1995) separates these fields from Health or Sciences. Finnie (1999b)³ also provides a detailed level of disaggregation. Both authors found that these graduates ranked low on the earnings scale.

Engineering & Computer Science – The American evidence indicates that Engineering graduates rank very high on the earnings scale and Hecker (1995) finds that Computer Science

² Henceforth, these authors will be referred to as the “American evidence” in cases where their results are similar. In contradicting cases, we will mention specific outcomes.

³ Finnie also looked at recent Canadian graduates with the NGS.

graduates also do well relative to other fields. The other American authors did not separate Computer Science from other Sciences. Hecker (1995) found that females in Engineering and Computer Science ranked higher than their male counterparts in their respective field/gender group.

Other Health – We have found no American studies that separate these graduates from Medical or Biology graduates. Finnie (1999b) provides an identical category, and found that these graduates did relatively well throughout all cohorts of the NGS.

Mathematics & Physical Sciences – Finnie (1999b) discovered relatively high monetary rewards associated with these disciplines. Daymont and Andrisani (1984), Rumberger and Thomas (1993), and Hecker (1995) also found high rewards, but Hecker found average rewards for Geology majors.

Law – We did not find an analytical study that looks at earnings of Law graduates. Daymont and Andrisani (1984) report high earnings for “professional” graduates, which are generally thought to be Law and Medical graduates, but the authors provide no clear documentation on this category.

Medical Sciences – We did not find an analytical study that looks at earnings of Medical Sciences graduates. See the notes above on Law graduates.

3. The Data, Working Samples, and Descriptive Statistics

3.1 The Data and Working Samples

We chose the National Graduates Survey (NGS) to investigate the job satisfaction of recent graduates, and the main focus will be on the results by field of study. We look at graduates of the 1982, 1986, and 1990 classes that were interviewed two and five years after graduation by Statistics Canada.⁴ In each survey, respondents were asked to give their level of overall and monetary job satisfaction by choosing one of four choices that can be logically ordered.⁵ Appendix A shows how we derive a measure of non-monetary job satisfaction from these two measures. We decided to focus on university level graduates in order to compare our results with much of the earlier work done in evaluating fields of study,⁶ and our entire analysis *by field of study only* is disaggregated by gender. Our samples also exclude self-employed workers since these were not asked about job satisfaction. We've decided to include unemployed graduates (but not graduates that were out of the labour force) in our samples. We postulate that these individuals have revealed that "working" is at least as enjoyable for them as is "not working" by stating that they were looking for a job, and as such, we've given them the lowest possible job satisfaction values (non-monetary and monetary). This provides for a more robust evaluation of the fields of study than simply looking at individuals that are employed since employment rates can differ by field. Further restrictions are outlined in the tables that will follow.⁷

⁴ The data for the 1997 National Survey of 1995 graduates is available, but we chose not to use it since the follow-up data is unavailable.

⁵ The question was: "Considering all aspects of the job you had last week, how satisfied were you with the job?." This was asked separately in the context of overall satisfaction and monetary satisfaction. Four choices were given: "Very Satisfied," "Satisfied," "Not Very Satisfied," or "Not At All Satisfied." There were two very small changes in the choices for the 1990 grads: "Not Very Satisfied" was replaced by "Dissatisfied," while "Not At All Satisfied" was replaced by "Very Dissatisfied." These choices are to be interpreted by most people as roughly identical, and the scale of four logically ordered choices was preserved. Also, this change does not affect the longitudinal nature of our work since the choices remained the same within each *cohort*.

⁶ See Daymont and Andrisani (1984), Finnie (1999a and 1999b), Grogger and Eide (1994), Hecker (1995), Lowry and Garman (1995), and Rumberger and Scott (1993). Much of the earlier work focuses on undergraduates, but we decided to group all university levels together in order to provide a more complete picture. Contrary to studies of earnings (background for Finnie, 1999a and 1999b found that different levels of education can not be pooled together when one looks at earnings), we found that the effects of each field of study on job satisfaction did not vary significantly by level of education.

⁷ In all descriptive tables, results were suppressed if the calculations were based on less than 30 observations.

The National Graduates Surveys

The National Graduates Surveys (NGS), sponsored by Human Resources Development Canada and conducted by Statistics Canada, are specifically designed to obtain information on the relationship between education/training and labour market activities, the long-term labour market experiences of graduates, the employment, earnings, occupation and additional educational experiences and qualifications of graduates. The NGS focus on individuals who had obtained a degree, diploma or certificate from a trade/vocational school, a career/technical college (or CEGEP) or a university, and who were still living in Canada at the time of the survey. The NGS files are representative of the underlying graduate population in Canada.

Background

Statistics Canada conducted a first survey in 1978 on the labour market experiences of 1976 graduates from universities and community colleges in Canada. In 1984, a similar survey, the NGS of 1982 graduates was sponsored jointly by the Department of the Secretary of State and Employment and Immigration Canada and conducted by Statistics Canada. This survey expanded on the content of the previous survey and extended the population base to include graduates of trade/vocational programs in addition to graduates from community colleges and universities.

Since 1982, four cohorts of graduates have been surveyed. Every cohort was interviewed two and five years after graduation.

Year of graduation	First interview	Follow-up interview
1982	1984	1987
1986	1988	1991
1990	1992	1995
1995	1997	2000

The 2000 Follow-up Survey of the 1995 Graduates included a 'brain drain' component. Those who graduated in 1995 but who were living in the United States in June 2000 were included in the survey.

Objectives

The survey's key data objectives are:

- To obtain information for labour market analysis;
- To obtain information on the relationship between education/training and labour market experiences and the exposure of graduates to additional learning opportunities;
- To extend available information required to improve occupational supply and demand projection models and to conduct related studies of supply-demand imbalances in the labour market;
- To extend available information required to improve occupational supply and demand projection models and to conduct related studies of supply-demand imbalances in the labour market;
- To obtain data regarding longer-term market experiences of graduates;
- To obtain information on labour market experiences of members of target groups (such as women, visible minorities, native people, and the disabled);

- To gain a better understanding of school-work transitions and returns to human capital;
- To gain a better understanding of post-secondary education financing;
- To obtain more detailed information on knowledge and skills.

Methodology

The National Graduates Surveys were based on a stratified systematic random sample design. For each province, the graduate population was stratified into five education levels: trade/vocational (skilled trades), career/technical (college), undergraduate, master's level and doctorate. The levels were subsequently stratified into nine fields of study for those who had taken a college program and ten fields for trade/vocational and university graduates. These fields of study classifications were based on the 5-digit USIS (University Student Information System) and CCSIS (Community College Student Information System) codes used by Statistics Canada. The sample allocation to the strata was made to assure acceptable levels of detail and therefore acceptable data reliability for the provinces, education levels and fields of study.

A total sample was selected for every cohort of graduates. Interviewers attempted to contact all graduates in the sample, initially using the telephone numbers provided by their institution. On average for every cohort, 73% of the total sample selected were contacted and interviewed. The same individuals were contacted again for the follow-up interview.

Year of graduation	Total sample selected	Year of survey	Usable sample (response rate)
1982	49,150	1984	35,717 (73%)
		1987	31,167
1986	53,136	1988	40,814 (77%)
		1991	35,401
1990	51,111	1992	36,280 (71%)
		1995	35,816
1995	61,759	1997	43,040 (70%)
		2000	To be completed

For more detailed information on methodology, see:

Clark, Warren, Margaret Laing and Edith Rechnitzer (1986). *The Class of 82: Summary Report on the Findings of the 1984 National Survey of the Graduates of 1982*, Secretary of State and Statistics Canada.

Clark, Warren (1991). *The Class of 1986: A Compendium of Findings of the 1988 National Graduates Survey of 1986 Graduates with Comparisons to the 1984 National Graduates Survey*, Employment and Immigration Canada and Statistics Canada, Catalogue LM-198E92.

Little, Don and Louise Lapierre (1996). *The Class of 90: A Compendium of Findings from the 1992 National Graduates Survey of 1990 Graduates*, Human Resources Development Canada and Statistics Canada, Catalogue SC-125-12-96E.

Taillon, Jacques and Mike Paju (1999). *The Class of '95: Report of the 1997 National Survey of 1995 Graduates*, Human Resources Development Canada and Statistics Canada, Catalogue SP-121-04-99.

3.2 Job Satisfaction Levels: Interpretation Problems

Table 1 shows mean *overall* job satisfaction levels by field of study and gender for all interviews, while Table 2 shows mean *monetary* job satisfaction levels by field of study and gender for all interviews.⁸ The purpose of these tables is twofold: first, we want to illustrate in a practical manner the importance of longitudinal analysis of subjective variables – recall that we argued earlier that a detailed analysis on the *level* of job satisfaction could lead to biases – and second, the tables clearly demonstrate that many respondents gave the highest possible answer⁹ – a point that has very practical consequences for the regressions that will follow.

Purpose #1

The tables indicate that there are very small relative differences in the levels of reported satisfaction by five years out (i.e. once the graduates are well into their careers). These results are not surprising, since it may be argued that people who choose certain fields expect a certain level of job satisfaction. For example, a graduate of Education who reports the same level of satisfaction as a Medical Sciences graduate (generally a medical doctor or a dentist) may not actually experience the same level of happiness as the Medical Sciences graduate. The two individuals may simply have met their *expectations* to the same extent. For Table 2, we could have the following fictitious scenario: the Education graduate may have expected an earnings level of \$35,000 while the Medical Sciences graduate may have expected an earnings level of \$70,000. If the Education graduate earned \$30,000 at the time of the interview, and the Medical Sciences graduate earned \$60,000 at the time of the interview (i.e. they've fulfilled the same proportion of their respective career expectations), it is possible that both graduates are equally satisfied with the money they make. Since expectations may play an important role in job satisfaction, looking at numbers such as those presented in Tables 1 and 2 may be misleading. We need to look at *longitudinal*, rather than cross-sectional measures of job satisfaction. Subsection 3.3 provides an intuitive reason behind the virtue of longitudinal measures of job satisfaction.

⁸ The job satisfaction variable was recoded to percentage terms where a "4" was given a score of "100," a "3" was given a score of "66.7," a "2" was given a score of "33.3," and a "1" was given a score of "0." Although the rescaling is somewhat arbitrary, it does give a sense that the numbers are expressed as a percentage of the maximum level of satisfaction (since the maximum was given a score of 100).

⁹ Approximately 40% of the sample reported "very satisfied" in the first interview.

Table 1: Mean Overall Job Satisfaction by Field of Study

	1982 Cohort		1986 Cohort		1990 Cohort	
	1984	1987	1988	1991	1992	1995
Males						
All	71	78	71	75	73	75
Education	78	81	79	80	81	81
Fine Arts & Humanities	66	77	66	73	66	68
Commerce	73	79	71	74	73	78
Economics	63	75	60	70	68	71
Other Social Sc.	68	76	64	72	70	72
Agric. & Bio. Sc.	67	74	67	71	65	70
Eng. & Comp. Sc.	73	77	74	76	75	77
Other Health	73	80	77	79	86	77
Math & Physical Sc.	71	76	70	70	70	74
Law	70	83	78	83	82	79
Medical Sc.	77	82	75	82	82	76
Females						
All	70	76	71	76	71	75
Education	74	78	78	80	80	75
Fine Arts & Humanities	65	72	65	73	66	81
Commerce	66	75	70	74	69	71
Economics	67	73	71	67	61	76
Other Social Sc.	67	75	68	75	67	68
Agric. & Bio. Sc.	64	76	64	74	65	73
Eng. & Comp. Sc.	77	78	74	76	73	70
Other Health	78	79	73	76	81	74
Math & Physical Sc.	73	77	66	79	71	78
Law	71	76	73	71	58	74
Medical Sc.	73	79	77	83	73	71

Notes: The samples are restricted to graduates who were in the labour force at the time of the interview.

In this and all following tables, a "—" indicates that the sample size was too small to report (see text for an explanation of the reporting rules).

Purpose #2

If we attempt to model the probability of reporting a higher level of job satisfaction in the second period, we are limited by the fact that many individuals *can't* report a higher level of satisfaction. We can circumvent this problem by further restricting our sample to those who did not report the highest level of satisfaction in the first period, but this obviously eliminates many respondents from the analysis. For this reason, we will begin our analysis with the event of *falling down* (i.e. reporting a lower level of job satisfaction in the second period), in which case we drop those who report the lowest possible level of satisfaction in the first period – an operation that resulted roughly in a 13% loss of sample size for the monetary measure, and a negligible amount for the non-monetary measure. This phenomenon is interesting to study since it indicates a growing discontentment with one's career – an event that is quite serious for individuals who have

invested heavily in their education. We will follow this work with a look into the event of *moving up* (i.e. reporting a higher level of job satisfaction in the second period).¹⁰

Table 2: Mean Monetary Job Satisfaction by Field of Study

	1982 Cohort		1986 Cohort		1990 Cohort	
	1984	1987	1988	1991	1992	1995
Males						
All	61	64	59	62	61	62
Education	67	65	66	65	69	63
Fine Arts & Humanities	58	61	55	61	54	55
Commerce	60	66	60	63	61	67
Economics	58	65	49	55	59	59
Other Social Sc.	58	62	53	58	58	58
Agric. & Bio. Sc.	57	61	56	57	57	56
Eng. & Comp. Sc.	62	66	61	63	64	64
Other Health	61	62	63	61	71	65
Math & Physical Sc.	61	66	61	59	61	62
Law	56	67	67	67	67	69
Medical Sc.	61	60	58	54	59	57
Females						
All	61	63	57	63	61	63
Education	66	67	63	66	68	65
Fine Arts & Humanities	58	58	53	61	57	60
Commerce	56	64	59	65	58	63
Economics	63	59	60	55	54	64
Other Social Sc.	57	61	53	61	58	62
Agric. & Bio. Sc.	53	60	51	58	55	58
Eng. & Comp. Sc.	66	65	63	65	64	64
Other Health	68	61	53	58	67	66
Math & Physical Sc.	61	67	55	68	63	64
Law	65	68	60	62	52	61
Medical Sc.	62	60	60	70	55	61

Note: The samples are restricted to graduates who were in the labour force at the time of the interview.

3.3 Falling Down: Trends and Cycles

Tables 3 & 4 show the empirical rates of individuals who fell down in non-monetary and monetary job satisfaction between interviews, respectively.¹¹ The longitudinal nature of these tables provides us with results that we anticipate to be “purged” of the effects of expectations. In

¹⁰ For the “moving up” results, we will attempt to correct for sample selection bias through an adjustment of sampling weights.

¹¹ We chose to look at monetary satisfaction over the more conventional earnings measures for two reasons: 1) Finnie (1999a and 1999b) has investigated the earnings effects of fields of study with the NGS, and 2) the construction of the earnings measure in the NGS does not allow for seasonal work; i.e. respondents are asked how much money they *would* make if they had worked at their current job for the entire year. By asking

particular, if expectations affect job satisfaction to the same extent in period 1 as it does in period 2, then expectations will not affect the probability that job satisfaction falls down for an individual. However, these tables still lack appropriate control mechanisms for other variables that may affect job satisfaction (such as marital status, hours of work, etc...). In Appendix B, we describe more appropriate techniques to evaluate the effects of various fields of study on the probability of reporting a lower level of job satisfaction in the second interview. We will see that these methods do not look at trends or cycles over time, but rather at variations in the effects of field of study *within* a given cohort; therefore, Tables 3 & 4 are presented solely to offer an indication of trends and cyclical patterns. A key element of this discussion will be the various stages of the economic cycle.

Let us begin by looking at the rates of falling down in non-monetary job satisfaction.¹² The first point of interest concerns the overall movements in the rates of falling down over the three cohorts. This can be seen by looking at the "All" category, where the results are not disaggregated by field of study. In short, graduates from the 1986 cohort were at a higher risk of falling down than the other graduates. This is not surprising considering the time frame of the NGS. More precisely, the 1986 graduates were interviewed in May 1988 and March 1991 – polar cases of an economic cycle. By March 1991, the Canadian economy was in the midst of a severe recession.¹³ With the threat of cutbacks, it is possible that the workers who remained employed¹⁴ enjoyed less job security. The graduates from the 1982 and 1990 cohorts benefited from more enjoyable changes in economic climates¹⁵ and were less prone to falling down.

The cyclical variations were less severe for males than for females. For the 1982 and 1990 cohorts, males and females had roughly equal probabilities of falling down; however, female members of the 1986 cohort were considerably more likely to fall than their male counterparts.

respondents to comment on their monetary satisfaction, it is possible that certain individuals' answers would reflect their discontentment at the fact that they do not earn money for the entire year.

¹² See Appendix C for an explanation of the derivation of the non-monetary job satisfaction variable.

¹³ Real GDP (Gross Domestic Product) had fallen 3.2% over the previous year (CANSIM Database, Statistics Canada).

¹⁴ Those who worked two years out, but were unemployed five years out were included in the sample and given the lowest possible level of monetary and non-monetary job satisfaction in the second interview.

¹⁵ Between June 1984 and March 1987 (the interview dates for the 1982 cohort), real GDP had risen 10.3%, while real GDP had risen 9.7% between June 1992 and June 1995 – the interview dates for the 1990 cohort (CANSIM Database, Statistics Canada).

This was true for every field of study except Engineering and Computer Science (where the probabilities were equal). Thus, the recession of the early 1990s affected the non-monetary satisfaction of recent female graduates more severely than recent male graduates.

Table 3: Percentage of Graduates who fell Down in Non-Monetary Job Satisfaction by Field of Study

	1982 Cohort	1986 Cohort	1990 Cohort
Males			
All	26	30	28
Education	24	28	21
Fine Arts & Humanities	21	29	26
Commerce	28	30	32
Economics	21	30	26
Other Social Sc.	26	31	31
Agric. & Bio. Sc.	29	28	26
Eng. & Comp. Sc.	27	33	25
Other Health	17	29	32
Math & Physical Sc.	33	29	28
Law	37	17	37
Medical Sc.	18	23	39
Females			
All	26	34	26
Education	25	32	23
Fine Arts & Humanities	27	32	27
Commerce	30	35	24
Economics	30	40	30
Other Social Sc.	27	35	26
Agric. & Bio. Sc.	26	33	25
Eng. & Comp. Sc.	26	33	27
Other Health	21	36	31
Math & Physical Sc.	35	40	26
Law	24	38	33
Medical Sc.	19	30	32

Note: In this and all following tables, the samples are restricted to graduates who did not report the lowest level of non-monetary job satisfaction (or monetary job satisfaction, when appropriate) in the first interview and were in the labour force at both interviews.

The detailed analysis by field of study yields some interesting results. We note first that since the cyclical pattern was very pronounced for females, most fields of study experienced a rise in the likelihood of falling down for the 1986 cohort (relative to the 1982 cohort) and a drop in the likelihood of falling down for the 1990 cohort (relative to the 1986 cohort). The one exception was the Medical Sciences group. Here we note an upward trend over the three cohorts.

Graduates from this field went from being at very low risk (1982 cohort), to medium risk (1986 cohort), and finally to high risk (1990 cohort). Another field of interest is Other Health (i.e. non-diagnostic health practitioners such as pharmacists, physiotherapists, nurses, etc...). These

graduates followed the usual cyclical pattern, but there was an important rise in the likelihood of falling down between the 1982 and 1986 cohorts.

The male results are generally less clear-cut since there is less of a cyclical component (i.e. most fields of study show little variation over the three cohorts), but we do note that Medical Sciences and Other Health graduates followed similar paths to females in these fields. It would seem that something happened to the health sector in the late 1980s and early 1990s that contributed to the sudden and sustained rise in the likelihood of falling down in non-monetary satisfaction. It is no secret that threats to downsizing in this sector have been afloat for many years, and it is possible that this has been a major factor in affecting the probability of falling down in non-monetary job satisfaction for the graduates in this sector.

We close our discussion on Table 3 by mentioning an anomaly. Male Law graduates went from being the most likely to fall down (1982 cohort), to being the least likely to fall down (1986 cohort), and finally to being the second most likely to fall down (1990 cohort). There seemed to be a "boom" period for these graduates between 1988 and 1991 where the respondents were extremely less likely than other graduates to experience growing discontentment with the non-pecuniary components of their job. Paradoxically, female Law graduates seemed to be excluded from this "boom" period.

Table 4 shows the probability of falling down in monetary job satisfaction. The pattern cyclical pattern is the exact opposite than in Table 3: graduates from the 1986 cohort were *less* likely to fall down than graduates from other cohorts. This holds for both genders, but once again, females displayed a stronger cyclical pattern. A decline in the likelihood that graduates fall down in monetary satisfaction between a period of economic prosperity and a period of recession seems somewhat strange at first glance; however, wages tend to be rigid downwards (e.g. union contracts may protect wages in exchange for lay-offs, many firms and government departments have certain pay scales that do not fall over time, etc...).

Certain interesting patterns by field of study emerge from Table 4. Medical Sciences graduates benefited from a sudden and sustained decline in the likelihood of falling down in monetary satisfaction in the 1986 cohort. Also, Other Health graduates followed a similar, albeit less

accentuated path. These results hold for both genders, and are once again the exact opposite of those found in Table 3. Health graduates in general (Medical Sciences and Other Health) became more prone to fall down in non-monetary satisfaction, but less prone to fall down in monetary satisfaction in the 1986 cohort. It would seem that the threats to health-care cuts have negatively affected the non-monetary components of recent Health graduates, but the monetary prospects of the graduates have yet to be negatively affected. A study on the well being of Health graduates that only considers earnings would fail to reveal any downturn.

Table 4: Percentage of Graduates who fell Down in Monetary Job Satisfaction by Field of Study

	1982 Cohort	1986 Cohort	1990 Cohort
Males			
All	28	27	28
Education	33	25	34
Fine Arts & Humanities	28	26	33
Commerce	25	24	21
Economics	27	32	33
Other Social Sc.	29	32	29
Agric. & Bio. Sc.	30	31	27
Eng. & Comp. Sc.	24	27	25
Other Health	30	26	25
Math & Physical Sc.	26	34	29
Law	20	32	23
Medical Sc.	38	28	27
Females			
All	34	25	29
Education	32	24	33
Fine Arts & Humanities	38	27	30
Commerce	25	24	27
Economics	44	38	32
Other Social Sc.	34	23	27
Agric. & Bio. Sc.	33	30	31
Eng. & Comp. Sc.	30	23	25
Other Health	39	25	22
Math & Physical Sc.	23	26	34
Law	38	28	33
Medical Sc.	35	16	19

We end our discussion of Table 4 in the same way as our discussion for Table 3. Male Law graduates followed an anti-cyclical path. They went from being the least at risk (1982 cohort), to the second most at risk (1986 cohort), and once again to the least at risk (1990 cohort). By comparing these results to those of Table 3, it would appear that male law graduates have a tendency to enjoy their jobs most (apart from earnings) when they are least satisfied with their

earnings. Perhaps some lawyers must work very long hours to increase their earnings. More work would be needed to derive more concrete reasons, and this is beyond the scope of our study.

3.4 Moving Up: Trends and Cycles

So far, our analysis has focused solely on the event of falling down in job satisfaction. We now examine the event of moving up in job satisfaction. For this analysis, we dropped all individuals who reported the highest level of job satisfaction (non-monetary and monetary) in the first period. This resulted in a minuscule sample loss for the non-monetary analysis. Unfortunately, this also led to a 25% sample loss for the monetary analysis. To correct for the sample selection bias, we have modeled the probability that an individual remains in the sample through logistic regressions. We then used the predicted probabilities to adjust the weights to account for the unequal probabilities of selection. More specifically, we identified individuals that stayed in the sample, but shared similar characteristics with those that left the sample. Such individuals were given greater weights, whereas individuals that also stayed in the sample but did not share similar characteristics with those that left the sample were given smaller weights. This method was chosen over the Heckman selection model since Heckman's method critically depends on the normality of errors (for the regression models that will follow), and serves no purpose for descriptive analysis.

Tables 5 and 6 show the rates of moving up for the non-monetary and monetary measures of job satisfaction. The overall rate of moving up in non-monetary satisfaction was lowest in the second cohort. This follows our earlier results in subsection 3.3 where we found that individuals were most likely to fall down in the second cohort. Once again, we point to the recession of the early 1990s as a possible cause behind these measures. There is no discernable trough for the monetary measure in this period. We can relate this finding to the possibility that many individuals had accumulated significant wage gains in the late 1980s.

Table 5 indicates that female Medical Sciences and Other Health graduates had experienced a downward trend in their rates of moving up in non-monetary satisfaction. This supports our earlier hypothesis that something happened in the health-care sector that lowered the non-monetary aspects of its workers. It is worth noting that males do not follow this downward trend

for the event of moving up. That is, just as many males in the health-care sector experienced rises in non-monetary job satisfaction in the latter periods as in the earlier periods. In subsection 3.3, we had mentioned the possibility of a "boom" period for male Law graduates in the 1980s. Table 5 further supports this notion as we notice a steep rise in the rate of moving up for these graduates in the second cohort. Once again, females seemed to have been excluded from this "boom."

Table 5: Percentage of Graduates who moved up in Non-Monetary Job Satisfaction by Field of Study

	1982 Cohort	1986 Cohort	1990 Cohort
Males			
All	33	28	33
Education	35	28	40
Fine Arts & Humanities	38	31	36
Commerce	30	25	27
Economics	37	28	32
Other Social Sc.	34	30	32
Agric. & Bio. Sc.	35	29	36
Eng. & Comp. Sc.	30	26	31
Other Health	30	32	26
Math & Physical Sc.	28	27	35
Law	24	33	24
Medical Sc.	36	34	36
Females			
All	35	28	33
Education	33	27	33
Fine Arts & Humanities	40	28	35
Commerce	30	26	34
Economics	37	27	33
Other Social Sc.	36	31	33
Agric. & Bio. Sc.	33	32	34
Eng. & Comp. Sc.	37	27	33
Other Health	41	29	25
Math & Physical Sc.	27	31	36
Law	35	23	36
Medical Sc.	32	27	21

Note: In this and all following tables, the samples are restricted to graduates who did not report the highest level of non-monetary job satisfaction (or monetary job satisfaction, when appropriate) in the first interview and were in the labour force at both interviews.

Table 6 indicates that males and females from Medical Sciences and Other Health fields experienced sudden large increases in the rates of moving up in the later cohorts. Although males only saw this increase in the third cohort, the results generally mirror the conclusions found in subsection 3.3: at some undefined point in the late 1980s to early 1990s, graduates of

Medical Sciences and Other Health fields typically suffered losses in the non-monetary components of their jobs, but this was at least partially offset by gains made in the monetary aspects of their jobs.

Table 6: Percentage of Graduates who moved up in Monetary Job Satisfaction by Field of Study

	1982 Cohort	1986 Cohort	1990 Cohort
Males			
All	37	34	33
Education	31	29	23
Fine Arts & Humanities	40	34	34
Commerce	39	38	39
Economics	38	40	34
Other Social Sc.	39	36	35
Agric. & Bio. Sc.	39	33	34
Eng. & Comp. Sc.	36	34	32
Other Health	27	35	28
Math & Physical Sc.	42	34	34
Law	50	26	33
Medical Sc.	26	26	38
Females			
All	39	39	37
Education	37	34	30
Fine Arts & Humanities	44	43	44
Commerce	44	40	39
Economics	29	26	54
Other Social Sc.	38	42	39
Agric. & Bio. Sc.	46	42	45
Eng. & Comp. Sc.	36	35	26
Other Health	25	36	26
Math & Physical Sc.	48	48	44
Law	48	41	55
Medical Sc.	33	48	49

In subsection 3.3, we found that male Law graduates typically enjoyed the non-monetary components of their jobs most when they were the least satisfied with their earnings. Tables 5 and 6 support this finding.

4. Regression Results

Initially, we had considered modeling the probability of falling down (or moving up) in overall job satisfaction by regressing this event on the fields of study variables, earnings, and other controls. The problem with this model is that the earnings variable may be too highly correlated with the fields of study variable. This would make it quite difficult for the regression procedure to disassociate the effects of the fields of study from the effects of earnings on the dependent variable. Unfortunately, we had to include earnings in this model in order to separate the monetary effects of the fields from the non-monetary effects of the fields. This is what led us to derive the non-monetary measure of job satisfaction. Both of the existing models do not use earnings as an explanatory variable since this is unnecessary (i.e. the field of study coefficients are no longer convoluted, even in the monetary satisfaction models, since the omission of the earnings variable allows the field of study coefficients to “soak up” the indirect effects that the fields have on monetary satisfaction through the medium of earnings). The models include males and females, but allow the field of study coefficients to vary across gender. Other control variables were expressed in change form (transitions from state “A” to state “B”) to allow for different paths of characteristics to have different effects, or were expressed in non-change form (where it was appropriate). These variables include change of industry (we defined three possible states: public, semi-public, and private), marital status changes, presence of dependent children, provincial mobility, mother tongue (interacted with the provincial variables), an indicator variable for the presence of five or more years of full-time work experience prior to enrolling in the academic program, a new diploma control, and controls for graduate degrees. We decided to limit the number of change from variables due to potential endogeneity problems. We note that there was no field of study coefficient that was significantly different across level of education. Appendix A shows how we converted regression coefficients into the impact of the variable in question on the probability of the event being modeled, whereas Appendix B outlines these variables in detail. We also note that we chose not to over-control for job characteristics in the regressions. This measure was taken on the grounds that the fields of study may lead a graduate to obtain certain job characteristics, and the inclusion of both field of study, as well as job characteristics in the model would lead to multicollinearity problems.

Table 7: Regression Results (Falling Down – Non-Monetary Model)

	1982 Cohort		1986 Cohort		1990 Cohort	
	Coefficient	Marg. Effect	Coefficient	Marg. Effect	Coefficient	Marg. Effect
Allcd	0.067	0.017	0.041	0.010	-0.436 **	-0.104
Finehu	-0.174	-0.043	0.055	0.014	-0.121	-0.030
Commer	0.105	0.026	0.130	0.032	0.152 *	0.038
Ecn	-0.233	-0.057	0.111	0.028	-0.101	-0.025
Othssc	0.032	0.008	0.200 *	0.050	0.112	0.028
Agbios	0.168	0.042	0.017	0.004	-0.152	-0.038
Engcsc	0.039	0.010	0.224 **	0.055	-0.234 **	-0.058
Othhea	-0.463	-0.110	0.059	0.015	0.124	0.031
Mathph	0.377 **	0.091	0.050	0.012	-0.069	-0.017
Law	0.530 **	0.124	-0.628 **	-0.143	0.348 **	0.084
Med	-0.448 *	-0.107	-0.259	-0.064	0.377	0.091
Allcdf	-0.012	-0.003	-0.110	-0.027	-0.236 **	-0.058
Finehuf	0.085	0.021	-0.093	-0.023	-0.015	-0.004
Commerf	0.151	0.038	-0.028	-0.007	-0.194 *	-0.048
Ecnf	0.147	0.037	0.241	0.059	0.181	0.045
Othsscf	0.098	0.024	0.047	0.012	-0.067	-0.017
Agbiosf	0.022	0.005	-0.047	-0.012	-0.106	-0.027
Engcscf	-0.097	-0.024	-0.116	-0.029	-0.050	-0.012
Othheaf	-0.241	-0.059	0.003	0.001	0.121	0.030
Mathphf	0.393 *	0.094	0.165	0.041	-0.062	-0.016
Lawf	-0.172 *	-0.043	0.200	0.050	0.298	0.073
Medf	-0.374	-0.090	-0.263	-0.065	0.129	0.032
Fullpart	0.069	0.017	0.195 *	0.048	0.330 **	0.080
Partfull	-0.235 **	-0.058	-0.217 **	-0.054	-0.263 **	-0.065
Partpart	0.286 **	0.070	0.131	0.033	0.255 **	0.063
Permtemp	0.595 **	0.136	0.148	0.037	0.173 *	0.043
Tempperm	0.259 **	0.064	-0.143 **	-0.036	0.231 **	0.057
Temptemp	0.108	0.027	-0.178 *	-0.044	0.208 **	0.051
Pubpub	0.018	0.004	-0.213 **	-0.053	-0.270 **	-0.066
Pubsemi	0.089	0.022	-0.279	-0.069	0.464 **	0.110
Pubpriv	-0.094	-0.023	-0.225	-0.056	-0.617 **	-0.140
Semipub	-0.088	-0.022	0.199	0.049	0.968 **	0.193
Semisemi	-0.240 **	-0.059	0.051	0.013	-0.033	-0.008
Semipriv	-0.182	-0.045	0.379 **	0.092	0.115	0.029
Privpub	-0.276 *	-0.068	0.293 **	0.072	-0.482 **	-0.114
Privsemi	-0.523 **	-0.122	-0.020	-0.005	-0.747 **	-0.163
Marrsgl	-0.169	-0.042	0.106	0.026	0.021	0.005
Sglmarr	0.051	0.013	0.096	0.024	-0.027	-0.007
Sglsgl	-0.063	-0.016	0.146 **	0.036	0.042	0.010
Chilchil	0.075	0.019	-0.030	-0.007	0.009	0.002
Ncchil	0.332 *	0.081	0.102	0.025	-0.310	-0.076
Ncnc	0.112	0.028	0.131 *	0.033	-0.092	-0.023
Move	-0.304 **	-0.074	0.003	0.001	-0.025	-0.006
Atlan	0.011	0.003	0.051	0.013	0.162 *	0.040
Que	0.041	0.010	0.119 **	0.030	0.176 **	0.044
Prari	-0.077	-0.019	-0.077	-0.019	0.014	0.003
Albt	0.029	0.007	-0.018	-0.004	0.075	0.019
Bct	0.025	0.006	0.165 *	0.041	0.268 **	0.066
Engpq	0.036	0.009	-0.170	-0.042	-0.200	-0.050
Frenout	0.197	0.049	0.103	0.026	-0.292 **	-0.071
Othall	0.073	0.018	0.025	0.006	0.129 *	0.032
Pre5mor	-0.154 **	-0.038	-0.133 **	-0.033	0.014	0.003
Newdip	-0.148 **	-0.037	-0.163 **	-0.040	-0.085 *	-0.021
Ma	0.024	0.006	-0.046	-0.011	-0.078	-0.020
Phd	0.010	0.003	0.080	0.020	0.048	0.012
Obs.	10,021		11,222		11,416	

Note: A **** ("****") indicates that the coefficient is significantly different from zero (the mean of all field coefficients) according to a 5% Wald Chi-Square test, whereas a *** ("***") indicates an analogous 10% level of significance.

Table 8: Regression Results (Falling Down – Monetary Model)

	1982 Cohort		1986 Cohort		1990 Cohort	
	Coefficient	Marg. Effect	Coefficient	Marg. Effect	Coefficient	Marg. Effect
Allied	-0.046 **	-0.011	-0.192	-0.048	0.241	0.059
Finehu	-0.093	-0.023	-0.264	-0.065	-0.226 **	-0.056
Commer	-0.018	-0.004	0.209 **	0.052	0.327 **	0.080
Ecn	0.062	0.016	0.212	0.052	0.023 **	0.006
Othssc	0.069	0.017	0.069 *	0.017	-0.043	-0.011
Agbios	-0.151	-0.038	-0.144	-0.036	0.039	0.010
Engcsc	0.025	0.006	-0.046	-0.012	-0.145	-0.036
Othhea	-0.093	-0.023	0.164	0.041	0.082	0.020
Mathph	-0.367	-0.089	0.200	0.050	-0.153	-0.038
Law	0.346	0.084	-0.057	-0.014	-0.276	-0.068
Med	-0.129	-0.032	-0.047	-0.012	0.012	0.003
Alliedf	0.124	0.031	0.077	0.019	0.019	0.005
Finehuf	-0.415	-0.099	-0.157	-0.039	0.096	0.024
Commerf	0.526 **	0.123	0.634	0.144	0.228 *	0.056
Ecnf	0.048 **	0.012	-0.125 **	-0.031	-0.188	-0.047
Othssc	0.021	0.005	0.161	0.040	0.128	0.032
Agbiosf	-0.118	-0.029	-0.167	-0.041	0.010	0.003
Engcscf	0.206	0.051	0.024	0.006	-0.478	-0.113
Othheaf	-0.448	-0.107	-0.013	-0.003	0.356 **	0.086
Mathphf	0.220 *	0.054	0.144	0.036	0.376 **	0.091
Lawf	-0.036	-0.009	-0.531	-0.124	-0.560 *	-0.130
Medf	-0.065	-0.016	-0.106 *	-0.026	0.163	0.040
Fullpart	-0.130	-0.032	0.017	0.004	0.172 *	0.043
Partfull	-0.062	-0.015	-0.036	-0.009	-0.011	-0.003
Partpart	0.034	0.008	0.255 **	0.063	0.299 **	0.073
Permtemp	-0.062	-0.016	-0.212 **	-0.052	0.075	0.019
Tempperm	0.031	0.008	0.395 **	0.095	0.144 *	0.036
Temptemp	-0.091	-0.023	-0.357 **	-0.087	0.506 **	0.119
Pubpub	-0.256	-0.063	0.160	0.040	0.178	0.044
Pubsemi	0.849 **	0.178	1.137 **	0.209	0.696 **	0.154
Pubpriv	0.095	0.024	-0.540 **	-0.126	0.387	0.093
Semipub	0.132 *	0.033	-0.269 **	-0.066	0.467 **	0.111
Semisemi	0.793 **	0.170	0.928 **	0.188	0.356 **	0.086
Semipriv	-0.319	-0.078	-0.848 **	-0.178	-0.284	-0.070
Privpub	0.229	0.057	-0.611 **	-0.139	-0.128	-0.032
Privsemi	0.339 **	0.082	-0.276 **	-0.068	0.068	0.017
Marrsgl	0.130 *	0.032	-0.075	-0.019	0.153 **	0.038
Sglmarr	0.212 **	0.052	-0.087	-0.022	0.081	0.020
Sglsgl	0.087	0.022	0.000	0.000	0.111	0.028
Chilchil	0.427 **	0.102	0.191	0.047	0.184	0.046
Ncchil	0.053	0.013	-0.019	-0.005	0.042	0.011
Ncnc	0.247 **	0.061	0.291 **	0.071	-0.216 **	-0.053
Move	0.132	0.033	0.141	0.035	-0.216 **	-0.053
Atlan	0.373 **	0.090	-0.057	-0.014	-0.345 **	-0.084
Que	0.357 **	0.086	-0.098	-0.024	-0.296 **	-0.072
Prari	0.002	0.000	0.140	0.035	-0.097	-0.024
Albt	0.364 **	0.088	-0.155	-0.038	-0.599 **	-0.137
Bct	-0.056	-0.014	0.278 *	0.068	0.026	0.006
Engpq	-0.144	-0.036	0.418 **	0.100	0.175	0.043
Frenout	0.137 *	0.034	-0.032	-0.008	0.019	0.005
Othall	-0.113	-0.028	0.047	0.012	-0.066	-0.016
Pre5mor	0.058	0.014	-0.036	-0.009	-0.021	-0.005
Newdip	-0.063	-0.016	0.001	0.000	-0.074	-0.018
Ma	-0.018	-0.005	0.018	0.005	-0.184	-0.046
Phd	0.000 **	0.000	0.000 **	0.000	0.000 **	0.000
Obs.	8,869		10,458		10,231	

Note: A **** ("****") indicates that the coefficient is significantly different from zero (the mean of all field coefficients) according to a 5% Wald Chi-Square test, whereas a *** ("***") indicates an analogous 10% level of significance.

Table 9: Regression Results (Moving Up – Non-Monetary Model)

	1982 Cohort		1986 Cohort		1990 Cohort	
	Coefficient	Marg. Effect	Coefficient	Marg. Effect	Coefficient	Marg. Effect
Allcd	0.066	0.017	-0.143	-0.036	0.354 **	0.086
Finehu	0.204 °	0.050	0.007	0.002	0.100	0.025
Commer	0.016	0.004	-0.181 °	-0.045	-0.174 °	-0.043
Ecn	0.138	0.034	-0.001	0.000	-0.017	-0.004
Othssc	0.050	0.013	0.003	0.001	-0.024	-0.006
Agbios	0.066	0.016	-0.078	-0.019	0.094	0.023
Engcsc	0.017	0.004	-0.111	-0.028	0.015	0.004
Othhea	-0.103	-0.026	0.141	0.035	-0.278	-0.068
Mathph	-0.191	-0.047	-0.100	-0.025	0.080	0.020
Law	-0.355 °	-0.086	0.267	0.066	-0.368 °	-0.089
Med	0.090	0.022	0.196	0.049	0.218	0.054
Allcdf	-0.147	-0.037	-0.113	-0.028	0.075	0.019
Finehuf	0.126	0.031	-0.073	-0.018	0.078	0.019
Commerf	-0.137	-0.034	0.019	0.005	0.157 °	0.039
Ecnf	0.174	0.043	0.006	0.001	-0.010	-0.003
Othsscf	0.035	0.009	0.092	0.023	0.022	0.006
Agbiosf	-0.131	-0.033	0.119	0.030	0.068	0.017
Engcscf	0.191	0.047	0.047	0.012	0.135	0.034
Othheaf	0.300 **	0.073	0.074	0.019	-0.312 **	-0.076
Mathphf	-0.293	-0.072	0.184	0.046	0.173	0.043
Lawf	0.033	0.008	-0.277	-0.068	0.202	0.050
Medf	-0.150	-0.037	-0.078	-0.019	-0.589 **	-0.135
Fullpart	-0.206 *	-0.051	0.158	0.039	-0.013	-0.003
Partfull	0.547 **	0.127	0.710 **	0.157	0.481 **	0.114
Partpart	-0.069	-0.017	-0.131	-0.033	0.192	0.048
Permtemp	-0.268 *	-0.066	0.019	0.005	0.060	0.015
Tempperm	0.129 **	0.032	0.206 **	0.051	0.200 **	0.050
Temptemp	0.205 *	0.051	0.295 **	0.072	-0.150 *	-0.037
Pubpub	-0.099	-0.025	-0.103	-0.026	0.080	0.020
Pubsemi	0.101	0.025	0.452 **	0.107	-0.040	-0.010
Pubpriv	0.438 **	0.104	0.326 **	0.079	0.321 *	0.078
Semipub	0.323	0.079	0.122	0.030	-0.150	-0.037
Semisemi	0.181 **	0.045	-0.079	-0.020	0.032	0.008
Semipriv	0.463 **	0.110	-0.047	-0.012	0.091	0.023
Privpub	0.370 **	0.089	-0.338 **	-0.082	0.117	0.029
Privsemi	0.498 **	0.117	0.414 **	0.099	0.453 **	0.108
Marrsgl	0.225 *	0.056	-0.009	-0.002	-0.316 **	-0.077
Sglmarr	-0.128 *	-0.032	0.176 **	0.044	0.015	0.004
Sglsgl	0.053	0.013	-0.095	-0.024	-0.057	-0.014
Chilchil	-0.204 **	-0.050	0.062	0.016	-0.017	-0.004
Ncchil	-0.340 *	-0.082	-0.152	-0.038	0.265	0.065
Ncnc	-0.176 **	-0.044	-0.094	-0.024	-0.067	-0.017
Move	0.245 **	0.060	0.217 **	0.054	-0.098	-0.025
Atlan	-0.114	-0.028	0.001	0.000	-0.168 *	-0.042
Que	0.072	0.018	-0.138 **	-0.034	-0.180 **	-0.045
Prari	0.266 **	0.065	-0.036	-0.009	-0.137	-0.034
Albt	-0.016	-0.004	0.077	0.019	0.103	0.026
Bct	0.286 **	0.070	-0.111	-0.028	-0.398 **	-0.096
Engpq	0.058	0.014	-0.078	-0.019	0.157	0.039
Frenout	-0.130	-0.032	-0.010	-0.002	0.174	0.043
Othall	-0.111	-0.028	-0.006	-0.001	-0.029	-0.007
Pre5mor	-0.023	-0.006	0.193 **	0.048	-0.182 **	-0.045
Newdip	0.056	0.014	-0.025	-0.006	0.039	0.010
Ma	0.016	0.004	0.085	0.021	0.007	0.002
Phd	-0.026	-0.007	0.066	0.017	0.005	0.001
Obs.	10,021		11,222		11,416	

Note: A **** (****) indicates that the coefficient is significantly different from zero (the mean of all field coefficients) according to a 5% Wald Chi-Square test, whereas a *** (***) indicates an analogous 10% level of significance.

Table 10: Regression Results (Moving Up – Monetary Model)

	1982 Cohort		1986 Cohort		1990 Cohort	
	Coefficient	Marg. Effect	Coefficient	Marg. Effect	Coefficient	Marg. Effect
Allcd	0.088	0.022	0.001	0.000	-0.113	-0.028
Finehu	-0.043	-0.011	0.319	0.078	0.191	0.047
Commer	-0.116	-0.029	0.272 **	0.067	-0.041 *	-0.010
Ecn	0.132	0.033	0.122	0.030	0.102	0.025
Othssc	0.064	0.016	-0.114	-0.028	-0.116	-0.029
Agbios	-0.197	-0.049	0.076	0.019	-0.170	-0.042
Engcsc	-0.268 *	-0.066	0.185	0.046	-0.080	-0.020
Othhea	0.124	0.031	-0.045	-0.011	0.032	0.008
Mathph	0.433	0.103	-0.335	-0.082	-0.148	-0.037
Law	-0.270 **	-0.066	-0.411	-0.099	0.536	0.125
Med	0.208	0.052	-0.142	-0.035	-0.129 *	-0.032
Allcdf	0.137 *	0.034	0.064	0.016	0.064	0.016
Finehuf	0.057	0.014	0.128	0.032	-0.187	-0.046
Commerf	-0.670	-0.150	-0.654	-0.147	0.396 *	0.095
Ecnf	-0.023 **	-0.006	0.105 **	0.026	0.011 *	0.003
Othsscf	0.318	0.078	0.048	0.012	0.131	0.033
Agbiosf	-0.239 *	-0.059	-0.125	-0.031	-0.781	-0.168
Engcscf	-0.244	-0.060	-0.007	-0.002	-0.326 **	-0.079
Othheaf	0.328	0.080	0.341	0.083	0.078 **	0.020
Mathphf	0.081	0.020	0.009	0.002	0.313	0.076
Lawf	0.046	0.011	0.231	0.057	0.427	0.102
Medf	-0.147	-0.037	0.139	0.035	0.029	0.007
Fullpart	-0.336 **	-0.082	-0.148	-0.037	-0.208 *	-0.051
Partfull	0.002	0.000	-0.269 *	-0.066	0.137	0.034
Partpart	-0.302 *	-0.074	0.341 **	0.083	-0.136	-0.034
Permtmp	0.130 *	0.032	0.336 **	0.082	-0.132 *	-0.033
Tempperm	-0.135	-0.034	0.231 **	0.057	-0.289 **	-0.071
Temptemp	-0.500 **	-0.117	-0.177 *	-0.044	-0.496 **	-0.117
Pubpub	-0.045	-0.011	0.383 **	0.092	0.484 **	0.114
Pubsemi	-0.279	-0.068	0.007	0.002	-0.623 **	-0.142
Pubpriv	-0.288	-0.071	0.472 **	0.112	0.798 **	0.171
Semipub	-0.727 **	-0.160	-0.015	-0.004	-0.589 **	-0.135
Semisemi	-0.243	-0.060	0.469 **	0.111	0.068	0.017
Semipriv	0.659 **	0.148	1.059 **	0.202	1.070 **	0.204
Privpub	1.115 **	0.207	0.404 **	0.097	1.375 **	0.221
Privsemi	-0.310 *	-0.076	0.100	0.025	-0.055	-0.014
Marrsgl	0.006	0.002	0.019	0.005	0.016	0.004
Sglmarr	-0.006	-0.002	0.055	0.014	0.062	0.015
Sglsgl	0.195 **	0.048	-0.022	-0.006	-0.010	-0.002
Chilchil	0.072	0.018	0.138	0.034	-0.176	-0.044
Ncchil	-0.027	-0.007	-0.041	-0.010	-0.083	-0.021
Ncnc	0.153	0.038	0.109	0.027	0.310 **	0.076
Move	0.054	0.014	-0.200 *	-0.049	0.177 *	0.044
Atlan	-0.041	-0.010	-0.051	-0.013	0.140 **	0.035
Que	-0.281 **	-0.069	-0.055	-0.014	-0.133	-0.033
Prari	-0.162	-0.040	-0.017	-0.004	0.113	0.028
Albt	-0.169	-0.042	0.172 *	0.043	0.257 **	0.063
Bct	0.239	0.059	0.208	0.051	-0.244	-0.060
Engpq	0.464 **	0.110	0.048	0.012	-0.358 **	-0.087
Frenout	0.100	0.025	0.091	0.023	0.171 **	0.042
Othail	-0.141 *	-0.035	-0.194 **	-0.048	-0.022	-0.005
Pre5mor	0.247 **	0.061	0.174 **	0.043	0.128 **	0.032
Newdip	-0.060	-0.015	0.071	0.018	-0.128 *	-0.032
Ma	-0.058	-0.014	-0.093	-0.023	0.105	0.026
Phd	0.000	0.000	0.000	0.000	0.000 **	0.000
Obs.	8,869		10,458		10,231	

Note: A **** (****) indicates that the coefficient is significantly different from zero (the mean of all field coefficients) according to a 5% Wald Chi-Square test, whereas a *** (***) indicates an analogous 10% level of significance.

We have chosen to include all field of study dummy variables rather than to omit a category. The latter approach is more standard, but less robust to changes in the baseline category. To increase the robustness of our results, we've dropped the intercept term and included all fields in the model. We then rescaled the coefficients to represent deviations from the mean of all field of study coefficients. Therefore, the marginal effect columns for the field of study variables in Tables 7 through 10 show the marginal effects relative to the mean on the probability of falling down (or moving up).¹⁶

The variables of interest for our work are the fields of study.¹⁷ Interested readers may want to look at the other control variables in the models, but we have displayed the principal results by field of study in Graphs 1 through 8. These graphs show the marginal effects of each field of study (relative to the mean of all field effects) on the probability of falling down (or moving up). Graphs 1 & 2 relate to Table 7 (the non-monetary falling down model), Graphs 3 & 4 relate to Table 8 (the monetary falling down model), Graphs 5 & 6 relate to Table 9 (the non-monetary moving up model), Graphs 7 & 8 relate to Table 10 (the monetary moving up model). Before we begin analyzing the results in detail, we caution the reader that looking at these results across cohorts must always be interpreted as being *relative to the mean of a given cohort*. It is quite possible that a particular field has become more at risk relative to other fields, but has become less at risk relative to itself in an earlier cohort. Recall that Tables 3 through 6 were used to identify trends and cycles, and no similar type of analysis has been performed here. Finally, we also caution the reader that Graphs 1 through 8 represent relative risks. Bars that appear above the mean (the x-axis) represent risky fields, while bars that appear below the mean represent non-risky fields.

4.1 Falling Down: Non-Monetary Job Satisfaction Models

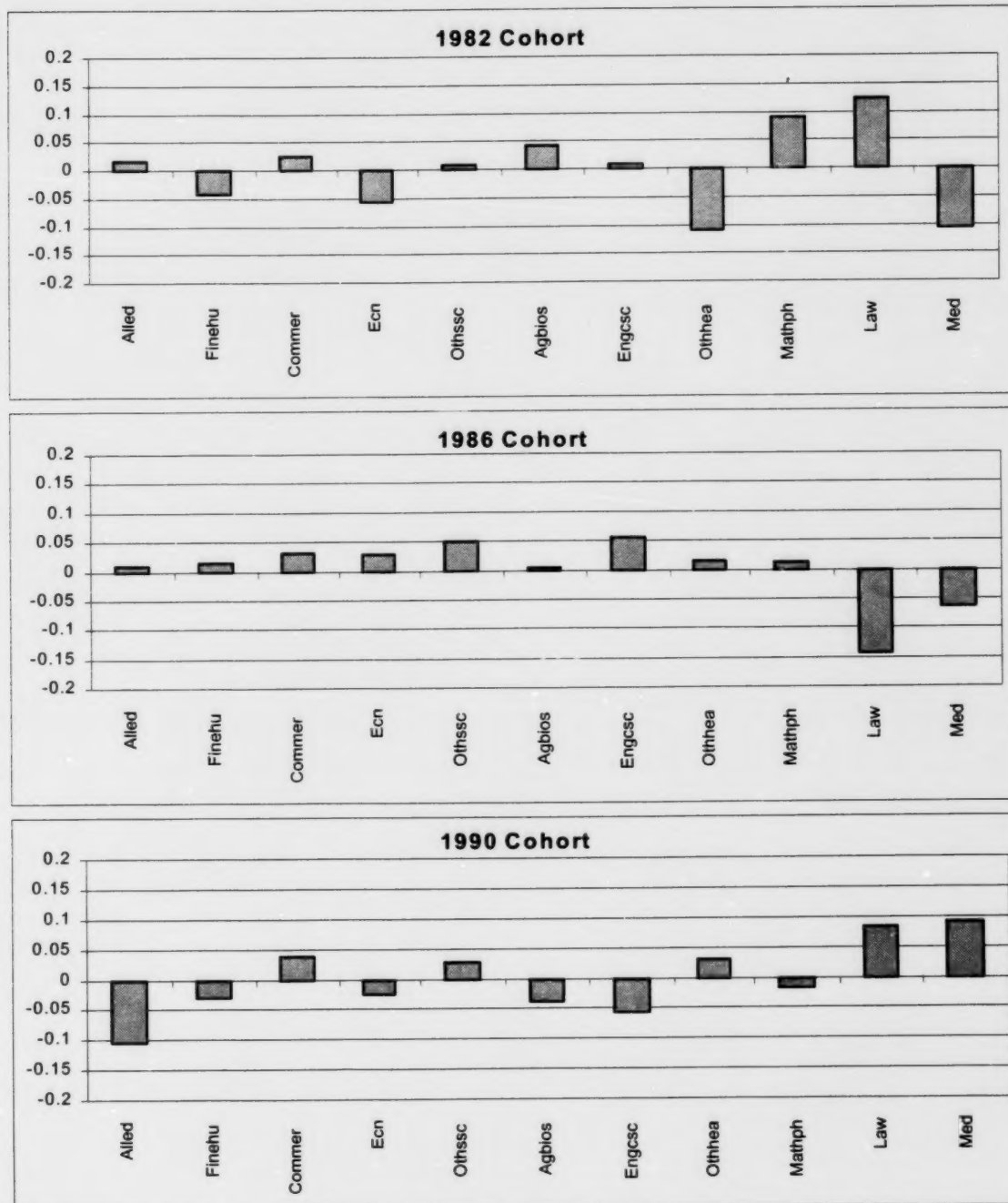
Graphs 1 and 2 indicate that most fields lie near the mean in terms of their effect on the probability of falling down in non-monetary job satisfaction; however, we do find some interesting results. For example, there is an interesting gender dichotomy occurring in the field

¹⁶ We would like to thank Ted Wannell for mentioning a procedure that is very similar to this.

¹⁷ Likelihood ratio tests were performed to verify the joint significance of the inclusion of the field of study variables in the models. In all cases, the alternative hypothesis of "jointly significant" was accepted at the 0.5% level.

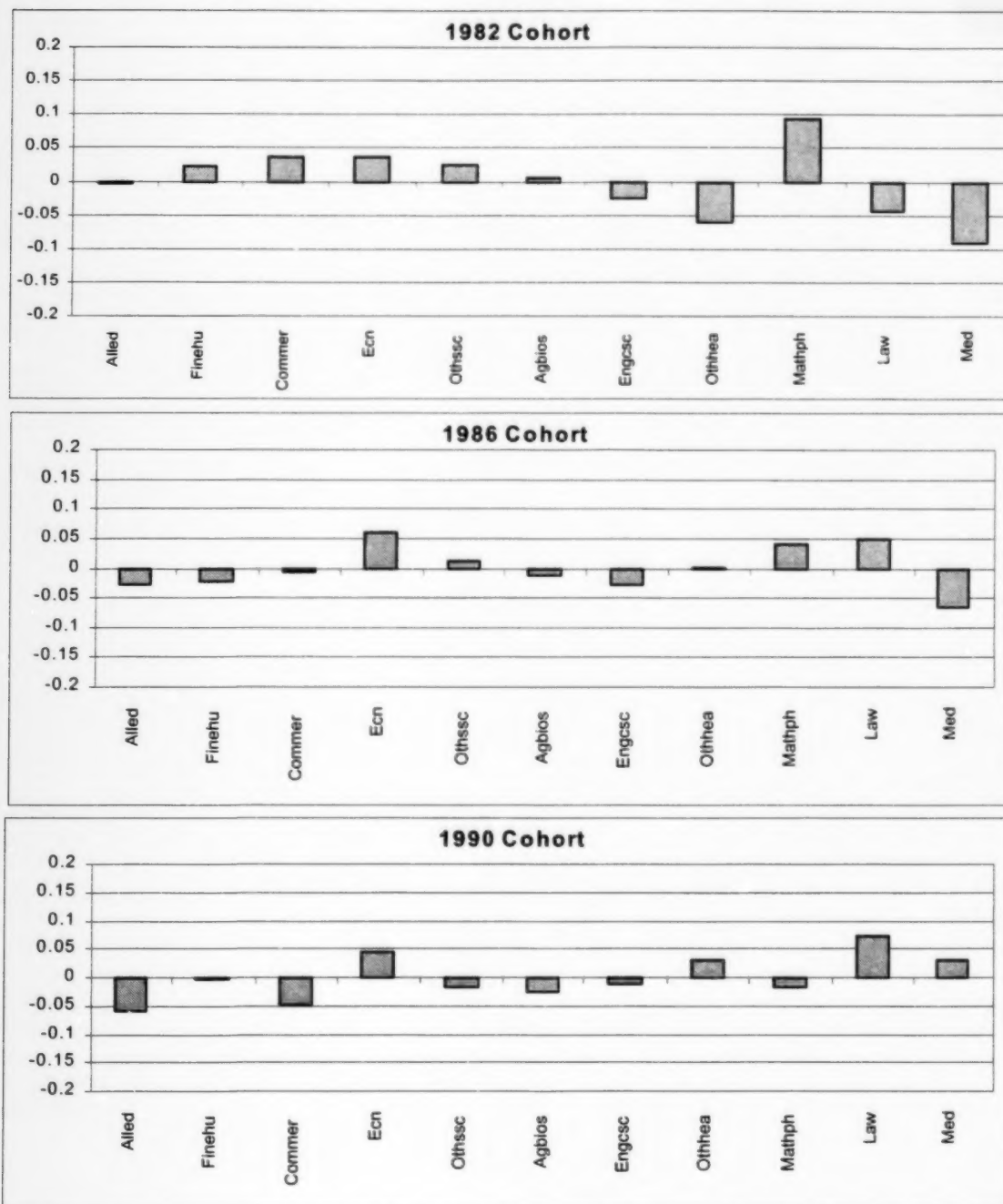
Graph 1: The Probability of Falling down Relative to the Mean of All Fields (Non-Monetary)

Males



Graph 2: The Probability of Falling down Relative to the Mean of All Fields (Non-Monetary)

Females



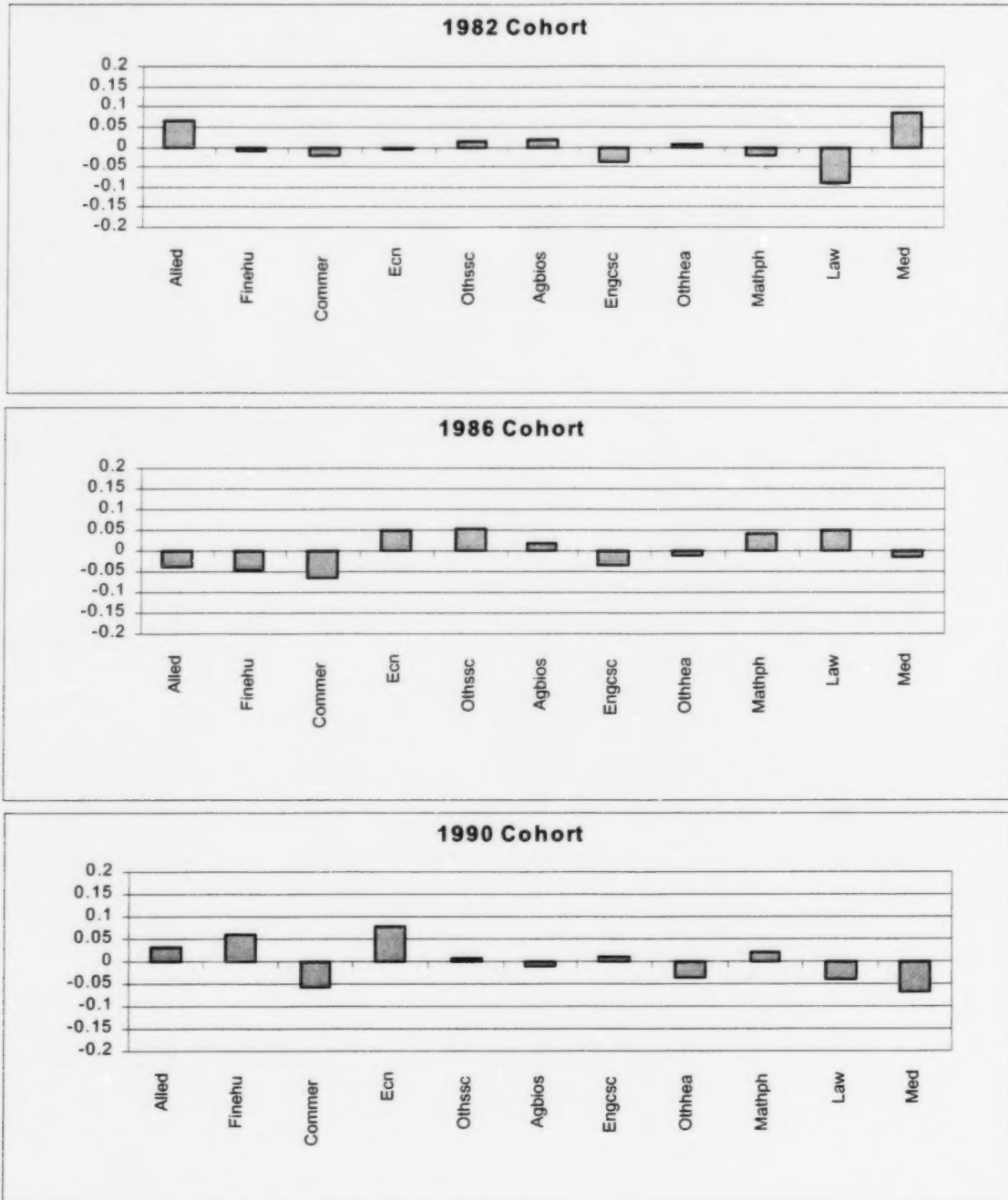
of Commerce. Males have always been at an above average risk of falling down, whereas females started at the same risk level as males (1982 cohort), but have gradually seen their risk drop over time. One theory is that private businesses have offered more appealing work environments to females. Two groups that have fared poorly are females in Economics, as well as graduates of Other Social Sciences. As mentioned earlier, graduates of Agricultural & Biological Sciences typically have low earnings, but our research indicates that they typically have average or below average probabilities of falling down in non-monetary job satisfaction. Females in Engineering & Computer Science have fared relatively better than their male counterparts. Graduates of Other Health have experienced a wide variation in probabilities. For the 1982 cohort, these graduates were the least (males) or second least (females) likely to fall down. Since then, they have experienced an above average likelihood of falling down. A somewhat similar story can be said for Medical Sciences graduates. For Mathematics & Physical Sciences graduates, the likelihood of falling down is above average. Finally, the anomaly found in Table 3 for male Law graduates is confirmed by regression analysis. For females, the likelihood of falling down was low in the first cohort, and high in the last two cohorts.

4.2 Falling Down: Monetary Job Satisfaction Models

The monetary job satisfaction models (from Graphs 3 & 4) yields further interesting results. Males from the Commerce field have been well insured against falling down in monetary satisfaction, but as we mentioned earlier, this is not the case for non-monetary satisfaction. Paradoxically, females have become more at risk of falling down in monetary satisfaction and less at risk of falling down in non-monetary satisfaction. For these graduates, it would seem that there is a trade-off in monetary and non-monetary job characteristics. Males from Agricultural & Biological Sciences fields have been at an average risk of falling down throughout all of the cohorts, but females have been at high risk (especially in the last two cohorts). The results from Tables 2 & 4 seem to imply that females in this field are typically at an average or higher risk of falling down in both types of job satisfaction compared to other female graduates. For Engineering & Computer Science fields, males and females have followed virtually identical paths: in the first two cohorts, they were at low risk of falling down, but in the third cohort, they were at an average risk of falling down. We note that females in Engineering & Computer Science have always been at lower risk of falling down in non-monetary and monetary job

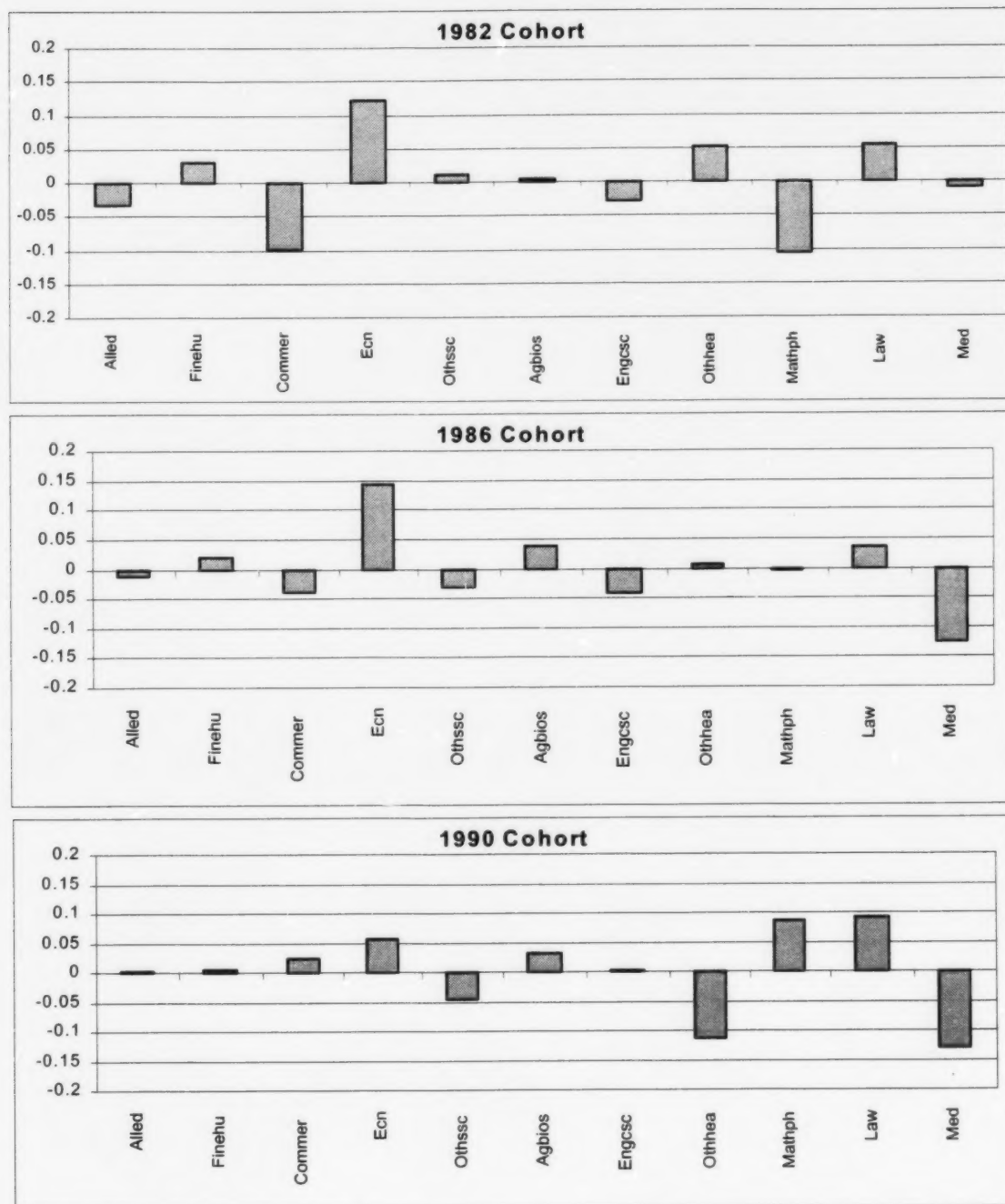
Graph 3: The Probability of Falling down Relative to the Mean of all Fields (Monetary)

Males



Graph 4: The Probability of Falling down Relative to the Mean of all Fields (Monetary)

Females



satisfaction than females in Agricultural & Biological Sciences (except for non-monetary satisfaction in the 1990 model, where the difference is marginal).

Males and females have both gradually decreased their risk of falling down by choosing Other Health fields. This contrasts with the non-monetary results that indicate a gradual increase in the risk of falling down for both genders. The situation for graduates of Mathematics & Physical Sciences has become worse over time for both genders, but this is especially the case for females. These results are contrary to what we found in the non-monetary models. The male Law results are the exact opposite of those found in the non-monetary regressions. Males are typically not prone to falling down (1982 and 1990 cohorts), except in the 1986 cohort, where they are very likely to fall down. Females law graduates are at a high risk of falling down throughout all cohorts. The risk of falling down has been decreasing for both genders over time for Medical Sciences graduates – results that are totally opposite to what we found in Graphs 1 & 2.

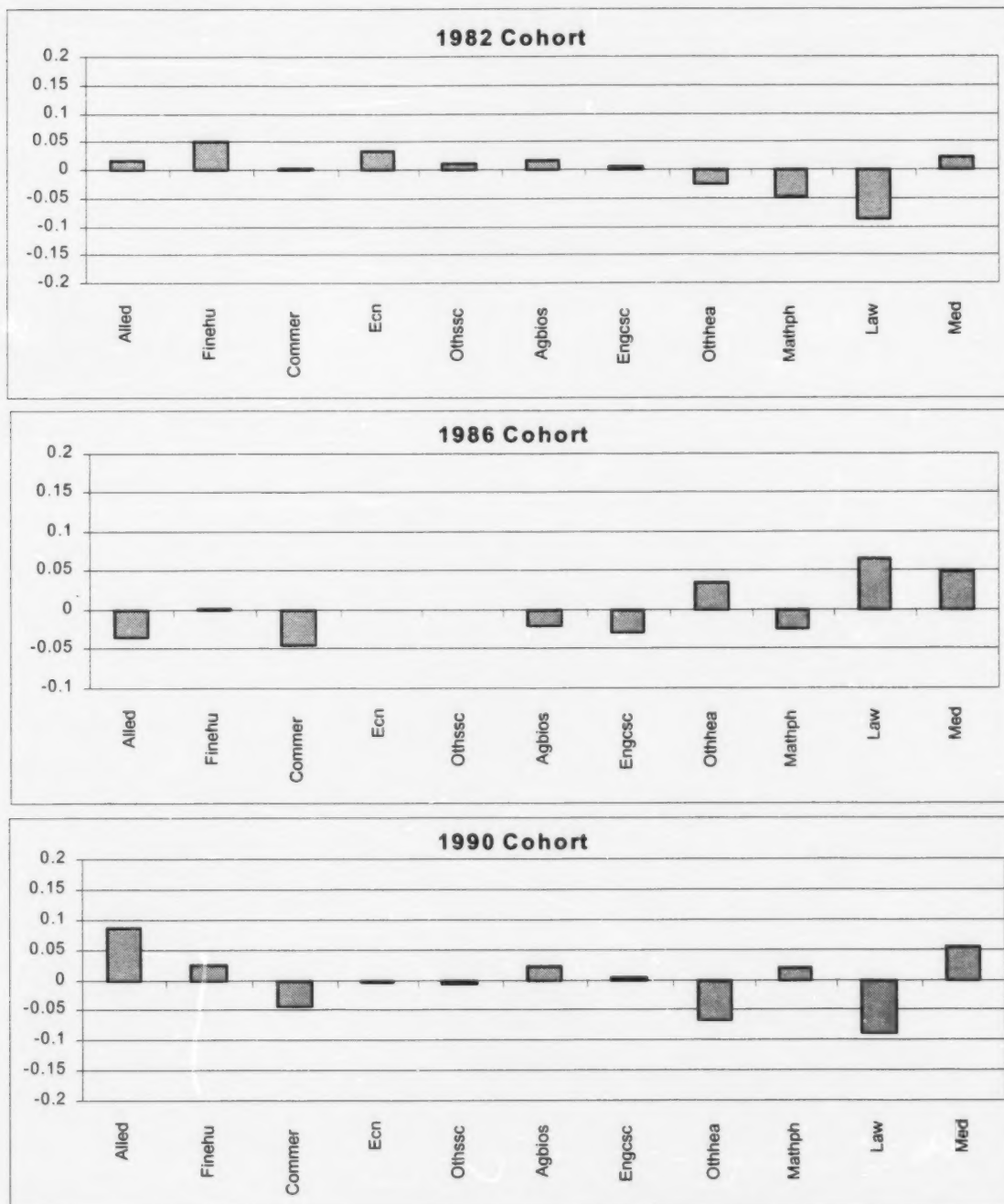
4.3 Moving Up: Non-Monetary Job Satisfaction Models

Graphs 5 and 6¹⁸ support the findings of subsection 4.1: choosing Medical Sciences and Other Health fields have lowered the probability of moving up in non-monetary satisfaction for females in the second and third cohorts (relative to the first cohort). Their male counterparts didn't experience a noticeable change after the first cohort. Our regressions once again confirm that male Law graduates experienced some sort of "boom" period in terms of the non-monetary components of their jobs in the late 1980s. In terms of female educational incentives, we do note a slight change over the falling down models. Females can still do better in terms of non-monetary job satisfaction by choosing Engineering & Computer Science over the more traditional Agricultural & Biological Sciences, but the difference is now almost negligible.

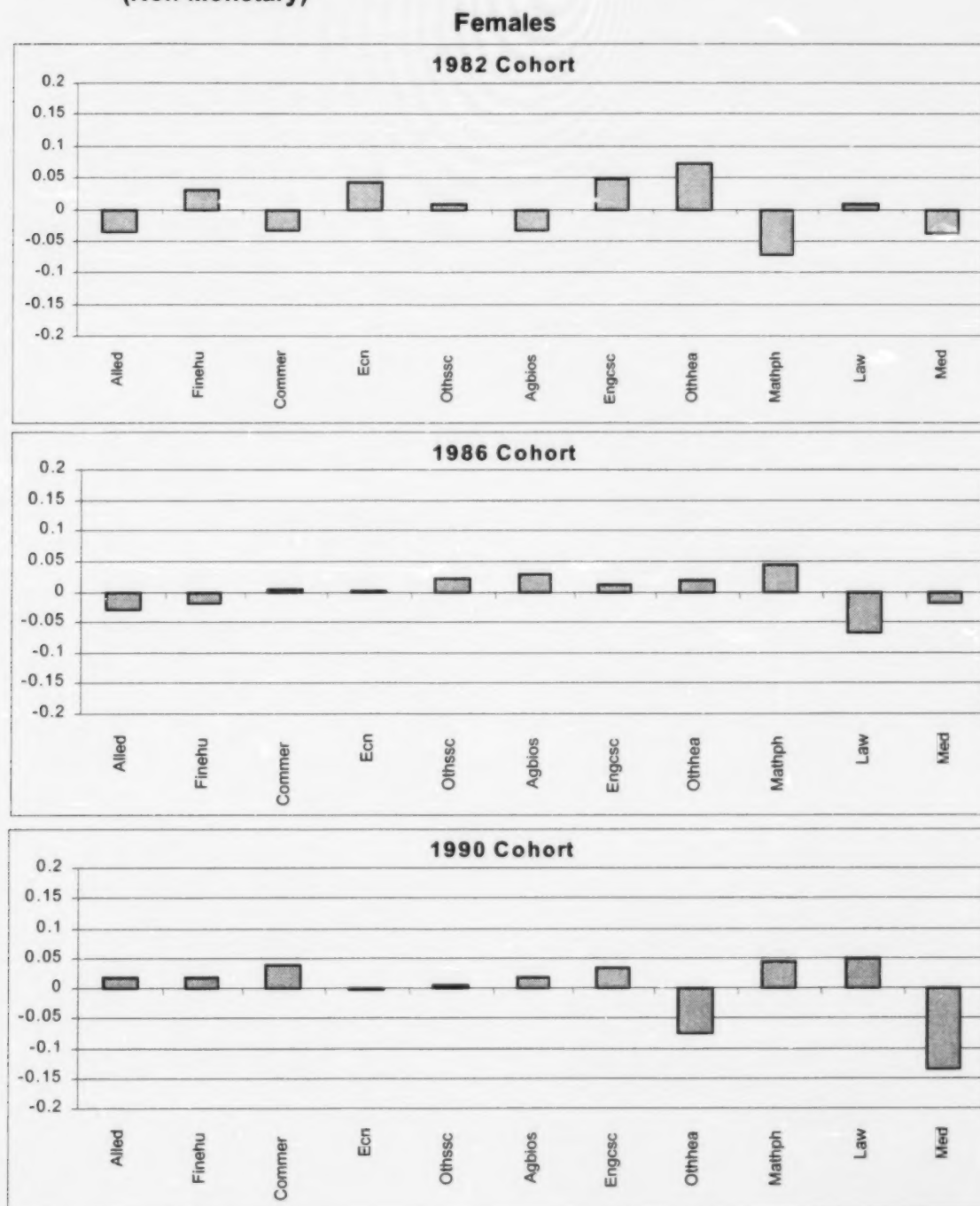
¹⁸ Note that any bars appearing above the horizontal axis should now be viewed favourably.

Graph 5: The Probability of Moving up Relative to the Mean of all Fields
(Non-Monetary)

Male



Graph 6: The Probability of Moving up Relative to the Mean of all Fields
(Non-Monetary)

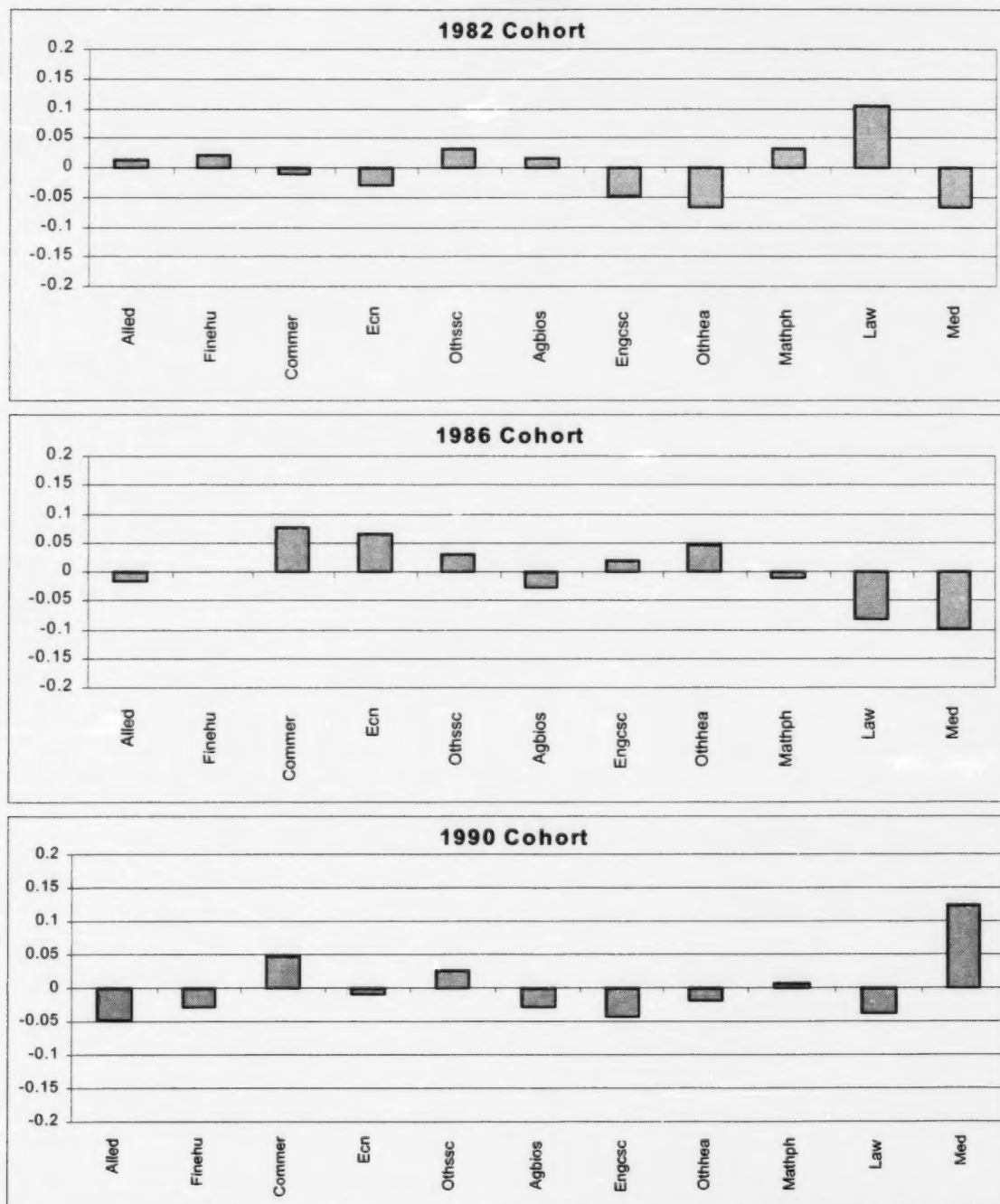


4.4 Moving Up: Monetary Job Satisfaction Models

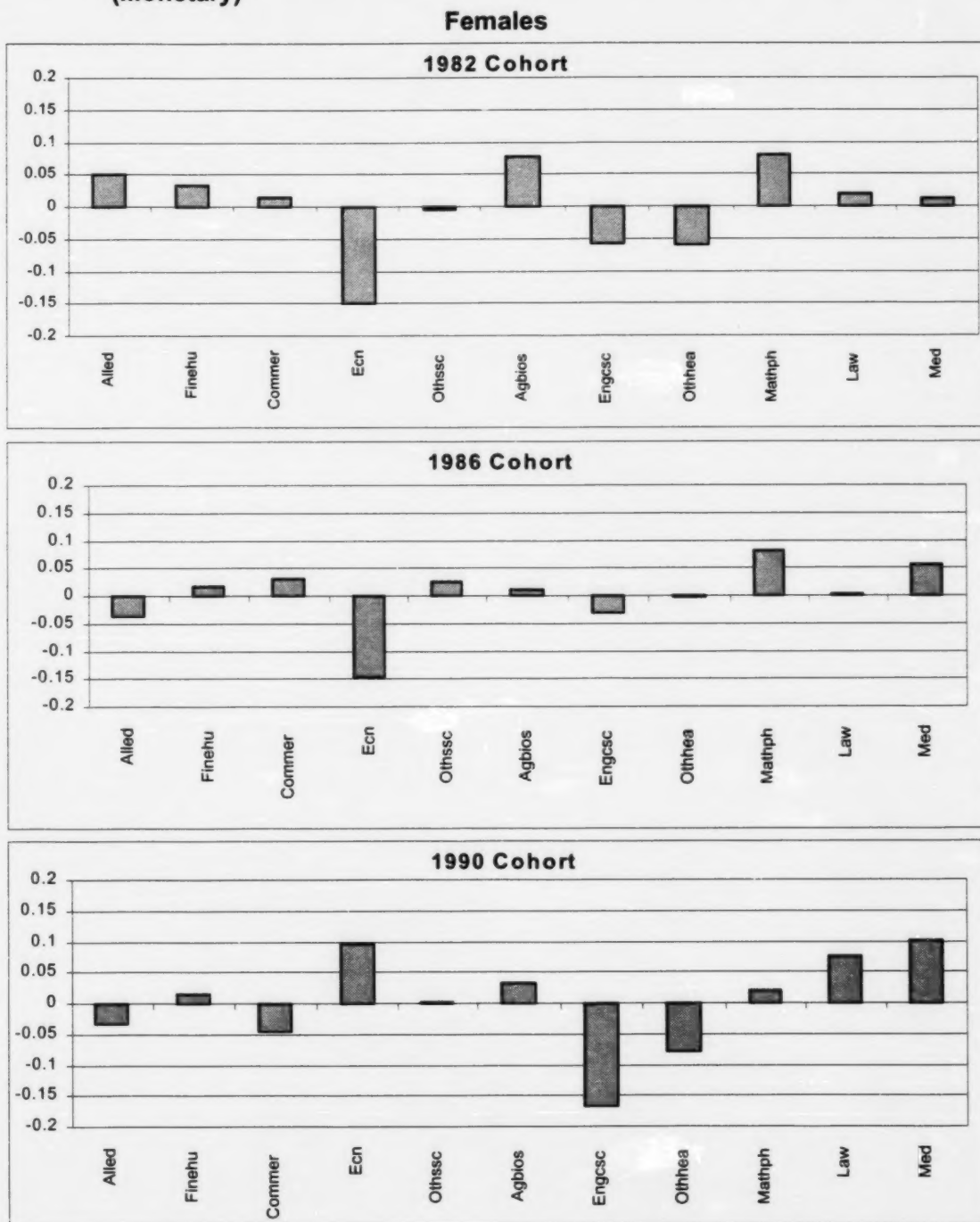
Graphs 7 and 8 show the results from the moving up models for the monetary job satisfaction measure. It would appear that the possibilities for upward mobility in monetary job satisfaction were quite good for both male and female graduates from Medical Sciences in the later cohorts, but this was not the case for Other Health graduates. Furthermore, the male Law results typically mirror those found in the falling down models (i.e. things got worse in monetary terms when things were good in non-monetary terms, and vice-versa) except for the third cohort, where there seemed to be little room for upward mobility in all aspects of their jobs. An interesting result arises for female educational incentives. So far, we have consistently found that females could do better in Engineering & Computer Science than in Agricultural & Biological Sciences. Graph 8 indicates that this is not the case for the event of moving up in monetary satisfaction. In fact, female graduates of Engineering & Computer Science programs ranked near the bottom in all periods of our study.

Graph 7: The Probability of Moving up Relative to the Mean of all Fields (Monetary)

Males



Graph 8: The Probability of Moving up Relative to the Mean of all Fields (Monetary)



5. Policy Implications and Conclusions

We've noted many studies that attempted to evaluate fields of study across standard labour market criteria. These criteria are usually limited to earnings or labour force status indicators. We've also demonstrated that subjective variables such as job satisfaction are difficult to analyze cross-sectionally. More specifically, we've shown that inter-field comparisons of the levels of job satisfaction yield results that are difficult to interpret. As a result of these complications, we chose to focus our study on the *risks* (both positive and negative) involved in selecting various fields of study. Our research has revealed some additional information that should be provided to students when selecting an academic discipline. For many fields (e.g. Commerce, Other Health, Mathematics & Physical Sciences, Medical Sciences, females in Education, and males in Law), we have found that the non-monetary results often completely contrasted with the monetary results. Standard earnings studies would not uncover these differences. Students may benefit from knowing that Law graduates are often classified at high risk of having careers that 'stall' in terms of interest. The same can be said for the recent non-monetary satisfaction of Medical Sciences and Other Health graduates.

This last point merits some particular attention. We have implicitly quantified one of the social impacts of the restructuring of the health care system in Canada. Health care cuts have been prevalent since the mid to late 1990s, but the *threats* of cutting costs have been made public for many years. These threats and the early cost cutting measures in the health care system may be driving our results for the Medical Sciences and Other Health graduates. Although we do not wish to develop a cost-benefit analysis of such measures, we do put forth the possibility that the sudden increase in the probability of falling down in non-monetary job satisfaction for these graduates may be a direct result of the loss in job security in the health care sector. Many activists mention the "human" costs involved in cost-cutting measures, but fail to compliment their hypothesis with substantive evidence. Our research indicates that those who actually lose their job may be the "tip of the iceberg" in terms of "human" costs.

Our work has also uncovered interesting implications for female educational incentives. In particular, scholarships designed to increase the proportion of women studying science should perhaps take into consideration the private benefit of their recipients. More precisely, the

incentive structure could be altered to encourage females to study the fields in which they have been shown to find the most success. Hecker (1995) and Finnie (1999b) found that female dominated fields such as Agricultural & Biological Sciences tend to offer low monetary rewards. Our research has found that in both non-monetary and monetary terms, females interested in studying scientific fields could do better by choosing Engineering & Computer Science.¹⁹

¹⁹ We acknowledge the fact that there appears to be little difference in the possibilities of moving up in job satisfaction between these fields, but the differences in the falling down models may warrant some attention.



Appendix A

Obtaining the Effect of a Variable on the Probability of an Event

The appendix shows how we recover the marginal effects from the coefficients of the model. For simplicity, let Y represent a dependent variable (a change in job satisfaction) and let $\mathbf{BX}$ represent the set of *all* coefficients, times their associated (explanatory) variable. We can then model the probability of reporting a change as follows:

$$E(Y|\mathbf{X}) = \mathbf{BX} = P(Y = 1|\mathbf{X}) \quad (1)$$

Where $E(Y|\mathbf{X})$ is the expected value of Y given $\mathbf{X}$, and $P(Y = 1|\mathbf{X})$ is the probability that $Y = 1$ given $\mathbf{X}$. The problems with estimating this linear probability model, which are well documented (see Long, 1997), include heteroscedasticity and probabilities that $Y = 1$ can be estimated to be outside the interval $[0,1]$. To eliminate interval problem, we must force the value of $\mathbf{BX}$ to be constrained by the interval $[0,1]$. A simple way of doing this is to assume that $\mathbf{BX}$ follows a particular distribution, and then regress $P(Y = 1|\mathbf{X})$ on the cumulative distribution function (cdf) of $\mathbf{BX}$ (which by definition always has a value in the closed interval $[0,1]$). The resulting model, which is based on the logistic cdf, is shown in equation (2):

$$P(Y = 1|\mathbf{X}) = \exp(\mathbf{BX}) / (1 + \exp(\mathbf{BX})) \quad (2)$$

This model is nonlinear and must be estimated by maximum likelihood methods (see Long, 1997).

A critical point revolves around the interpretation of the results. It can be shown that the elements of $\mathbf{B}$ can not be interpreted as the set of marginal effects on the predicted probability that $Y = 1$. This can be seen by taking the partial derivative of $P(Y = 1|\mathbf{X})$ in (2) with respect to a change in a particular regressor, the result of which is shown below:

$$\text{Marginal Effect of } B_k = L(\mathbf{BX}) * (1 - L(\mathbf{BX})) * B_k \quad (3)$$

Where $L(\mathbf{BX})$ is the logistic cdf of $\mathbf{BX}$, and B_k is the value of the k th coefficient taken at a representative point (e.g. the mean for continuous variables, and at "1" for dichotomous variables that are "activated," and zero otherwise).

Appendix B

Deriving a Measure of Non-Monetary Job Satisfaction

We have defined non-monetary job satisfaction as the residual of overall job satisfaction over monetary job satisfaction. More precisely,

$$\text{Non-Monetary Job Satisfaction} = \text{Overall Job Satisfaction} - \text{Monetary Job Satisfaction}$$

Cross-sectionally, this measure serves no useful purposes. Since we are only interested in the longitudinal properties of non-monetary satisfaction, we note that a good measure of non-monetary job satisfaction (in the longitudinal sense) must meet the following criteria:

- 1) If respondents suffer a drop in non-monetary job satisfaction, they must be able to convey this information to the interviewer (given the set of possible responses).
- 2) Measured changes in non-monetary job satisfaction must correspond to similar (real) changes in non-monetary job satisfaction.

Criteria 1) is met in all cases except when the respondent's level of non-monetary job satisfaction is at the lowest level in the first interview. We've circumvented this problem by eliminating these cases from the sample. This operation resulted in a minuscule 0.02% loss of sample size. This sample loss was deemed small enough to avoid the need to correct for sample selection selection bias through a Heckman selection model or by adjusting the sample weights.

Criteria 2) is more difficult to meet. The problem lies with the interpretation of certain "border" responses. For example, an individual who reports an overall level of satisfaction of "1" in the first interview and "2" in the second interview, and a monetary level of job satisfaction of "1" in the first interview and "3" in the second interview will be registered as having dropped in non-monetary satisfaction. However, we have no way of comparing the "1" in overall satisfaction with the "1" in monetary satisfaction in the first period. The respondents could not have expressed their dislike of their job more profoundly, leaving us with an inevitable bias. It is quite possible, however, that the individual actually fall down in this case, or even that he/she was just as dissatisfied with the overall aspects of his/her job as with the monetary aspects. It was

possible to determine the minimum percentage of cases for which criteria 2) was met. At least 62% of the cases met criteria 2) (1982 cohort only – the heavy work involved in generating this number has precluded us from investigating the 1986 and 1990 cohorts in a similar fashion). A naïve view (i.e. one that would have misinterpreted the certain “border” responses) would have concluded that 100% of the cases meet criteria 2), whereas a pessimistic view would conclude that 62% of the sample suffers from this “border” bias. We prefer to assume the more reasonable scenario where the number of correct cases lies considerably above 62%, but most likely well below 100%. More information is available from the author.

Appendix C

Description of the Variables Used in the Regression

Alled(f):	Education & Recreation (Teaching, School Counseling, Physical Education, Recreation, etc...). For all field of study variables, an <i>f</i> indicates a female interaction.
Finehu(f):	Fine Arts & Humanities (Music, Performing Arts, Classics, Languages, Philosophy, etc...).
Commer(f):	Commerce (Management, Business Administration, etc...).
Ecn(f):	Economics.
Othssc(f):	Other Social Sciences (Anthropology, Archaeology, Criminology, Geography, Psychology, etc...).
Agbios(f):	Agricultural & Biological Sciences (Agriculture, Animal Science, Biochemistry, Biology, etc...).
Engcsc(f):	Engineering & Computer Sciences (Architecture, Engineering, Forestry, Computer Science, etc...).
Othhea(f):	Other Health (Life Sciences, Nursing, Pharmacy, etc...does not include Medicine and Dentistry).
Mathph(f):	Mathematics & Physical Sciences (Mathematics, Chemistry, Geology, Physics, Astronomy, etc...).
Law(f):	Law and Jurisprudence.
Med(f):	Medicine and Dentistry.
Fullfull:	Full-time worker in both interviews (omitted).
Fullpart:	Full-time worker in 1 st interview, part-time worker in 2 nd interview.
Partfull:	Part-time worker in 1 st interview, full-time worker in 2 nd interview.
Partpart:	Part-time worker in both interviews.
Permp perm:	Job is permanent in both interviews (omitted).
Permtemp:	Job is permanent in 1 st interview, job is temporary in 2 nd interview.
Tempperm:	Job is temporary in 1 st interview, job is permanent in 2 nd interview.

Temptemp:	Job is temporary in both interviews.
Pubpub:	Public sector job in 1 st interview, public sector job in 2 nd interview.
Pubsemi:	Public sector job in 1 st interview, semipublic sector job in 2 nd interview.
Pubpriv:	Public sector job in 1 st interview, private sector job in 2 nd interview.
Semipub:	Semipublic sector job in 1 st interview, public sector job in 2 nd interview.
Semisemi:	Semipublic sector job in 1 st interview, semipublic sector job in 2 nd interview.
Semipriv:	Semipublic sector job in 1 st interview, private sector job in 2 nd interview.
Privpub:	Private sector job in 1 st interview, public sector job in 2 nd interview.
Privsemi:	Private sector job in 1 st interview, semipublic sector job in 2 nd interview.
Privpriv:	Private sector job in 1 st interview, private sector job in 2 nd interview (omitted).
Marrmarr:	Married both interviews (omitted).
Marrsgl:	Married or common-law in the 1 st interview, not married nor common-law in the 2 nd interview.
Sglmarr:	Not married nor common-law in the 1 st interview, married or common-law in the 2 nd interview.
Sglsgl:	neither married nor common-law in both interviews.
Chilchil:	Had dependant children in both interviews.
Chilnc:	Had dependant children in the 1 st interview, did not have dependant children in the 2 nd interview.
Ncchil:	Did not have dependant children in the first interview, had dependant children in the second interview.
Ncnc:	Had no dependant children in both interviews (omitted).
Move:	Moved provinces between interviews.
Atlan:	Remained in the Atlantic provinces in both interviews.
Que:	Remained in Quebec in both interviews.
Ont:	Remained in Ontario provinces in both interviews (omitted).
Prari:	Remained in the Prairie provinces in both interviews.

Albt:	Remained in Alberta provinces in both interviews.
Bct:	Remained in British Columbia or the Territories in both interviews.
Engpq:	Did not move, lived in Quebec, and considered English as mother tongue.
Frenout:	Did not move, lived outside Quebec, and considered French as mother tongue.
Othall:	Did not move and considered a language other than English or French as mother tongue.
Pre5mor:	Had five or more years of full-time work experience prior to enrolling in the program.
Preles5:	Had less than five years of full-time work experience prior to enrolling in the program (omitted).
Newdip:	Obtained a new diploma since graduating.
Nonewdip:	Did not obtain a new diploma since graduating (omitted).
Ma:	Graduated with a Master's degree.
Phd:	Graduated with a Doctorate.



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